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Armenta-Hernández, Oziely Daniela / *Autonomous University of Ciudad Juárez, Mexico* 439
Arredondo, Karina Cecilia / *Universidad Autonóma de Baja California, Mexico* 2111
Avelar-Sosa, Liliana / *Universidad Autónoma de Ciudad Juárez, Mexico* 415, 439
Baez-Lopez, Yolanda Angelica / *Universidad Autónoma De Baja California, Mexico* 1435
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Banerjee, Gargi / *Xavier University, India* 1118
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Bustillos, Manuel Alejandro Barajas / *Autonomous University of Ciudad Juárez, Mexico* 66
Byrd, Marilyn Y. / *University of Oklahoma, USA* 275
C., Karthikeyan / *T. John College, Bengaluru, India* 164
Caldeira, Ermelinda do Carmo / *Universidade de Évora, Portugal* 1392
Carvalho, Inês / *Universidade Europeia, Portugal* 1043
Chaibva, Cynthia Nombulelo / *National University of Science and Technology, Bulawayo, Zimbabwe* 2055
Chelliah, Shankar / *Universiti Sains Malaysia, Malaysia* 324
Chhabra, Bindu / *International Management Institute, India* 1324
Clack, Lesley / *University of Georgia, USA* 1161
Çolakoğlu, Ülker / *Adnan Menderes Üniversity, Turkey* 1208
Comer, Unoma B. / *National University, USA* 898
Costa, Carlos / *GOVCOPP, University of Aveiro, Portugal* 1043
Cross, Martyn / *Edith Cowan University, Perth, Australia* 2055
Dafogianni, Chrysoula / *University of West Attica, Greece* 912
Dariescu, Mihaela / *University of Roehampton, UK* 1834
Das, Sudip Kumar / *University of Calcutta, India* 1477
De Hert, Stefan / *Ghent University, Belgium* 752
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Duggirala, Mayuri / *TCS Research, Tata Consultancy Services, India* 707
Dworaczek Conde, Helga Ofelia / *Fundación Universitaria del Área Andina, Colombia* 185
Edwards, Frederik / *Technical University of Munich, Germany* 663
Evou, Jean Pierre / *University of Yaounde II, Cameroon* 1103
Ferebee, Susan / *Purdue University, West Lafayette, USA* 1196
Fernández-Torres, Yakira / *University of Extremadura, Spain* 1945
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Fletcher, Trina / *Florida International University, USA* 1884
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Frimpong, Kwasi / *Edith Cowan University, Perth, Australia* 2055
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García-Alcaraz, Jorge Luis / *Universidad Autónoma de Ciudad Juárez, Mexico* 66, 415, 439, 1339
Ghansah, Benjamin / *Data Link Institute, Ghana* 1088
Ghosh, Nitu / *REVA University, India* 345
Gibson, Murray / *Auburn University, USA* 242
Göğüsdere, Cahide / *Gazi University, Turkey* 1931
González-Muñoz, Elvia Luz / *Universidad de Guadalajara, Mexico* 543
Gorkey, Selda / *Istanbul Kultur University, Turkey* 1064
Grigoras, Ioana / *University of Medicine and Pharmacy "Grigore T. Popa" Iasi, Romania* 752
Gutierrez Bernal, Luis Gabriel / *Fundación Universitaria del Area Andina, Colombia* 185
Gutiérrez-Fernández, Milagros / *University of Extremadura, Spain* 1945

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Heitner, Keri L. / *All Aspects Research, Amherst, USA*.....1196
Hernández, Adolfo Hernando Hernández / *EAN University, Colombia*.....767
Hernández, Mónica Gabriela Gutiérrez / *Instituto Tecnológico de Ciudad Juárez, Mexico*.....1367
Hernández-Escobedo, Guadalupe / *Instituto Tecnológico de Tijuana, Mexico*.....600, 2111
Honorato-Cia, Cristina / *School of Medicine, University of Navarra, Spain*.....752
Horga, Maria Gabriela / *"Ovidius" University of Constanța, Romania*.....53
Hughes, Claretha / *University of Arkansas, USA*.....275, 303, 796, 1663
Hunter-Johnson, Yvonne O. / *North Carolina A&T University, USA*.....1866
Ibrahim, Adamkolo Mohammed / *University of Maiduguri, Nigeria*.....1980
Inouye, Todd M. / *University of Hawai'i at Hilo, USA*.....1963
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Jenkins, J. Jacob / *California State University, Channel Islands, USA*.....85
Joshi, Amol M. / *Oregon State University, USA*.....1963
Joshi, Mihir / *Gurukula Kangri Vishwavidyalaya, India*.....926
Junker, Maren / *Technical University of Munich, Germany*.....663
Kamboj, Shampy / *Amity University, India*.....137
Khaleel, Muhammad / *Universiti Sains Malaysia, Malaysia*.....324
Kiema-Junes, Heli Katariina / *University of Oulu, Oulu, Finland*.....1526
King, Bridgett A. / *Auburn University, USA*.....840
Klaffke, Martin / *Hochschule für Technik und Wirtschaft Berlin, Germany*.....1852
Kotadiya, Sanjay M. / *National Institute of Occupational Health, India*.....567
Krcmar, Helmut / *Technical University of Munich, Germany*.....663
Küçükoğlu, Mübeyyen Tepe / *Trakya University, Turkey*.....877
Kumar, Medi Narotham / *National Institute of Technology, Karnataka, India*.....996
Kumar, Sunil / *National Institute of Occupational Health, India*.....567
Kutch, Brenna Deanne Miaira / *Portland State University, USA*.....1811
Kutch, Juliana Sayumi Miaira / *Portland State University, USA*.....1811
Lawson, Sheron / *Wayland Baptist University, USA*.....303
Leal, Jaime Sánchez / *Instituto Tecnológico de Ciudad Juárez, Mexico*.....1367
Limon-Romero, Jorge / *Universidad Autónoma de Baja California, Mexico*.....1435
Liu, Kai / *Jiangsu Normal University, China*.....1021
Lorber, Mateja / *University of Maribor, Slovenia*.....516
Macassa, Gloria / *University of Gävle, Sweden*.....1693
Mahamuni, Ravi / *TCS Research, Tata Consultancy Services, India*.....707
Majumder, Joydeep / *National Institute of Occupational Health, India*.....567
Malagon Torres, Maria Alexandra / *Politecnico Grancolombiano, Colombia*.....185
Maldonado Macías, Aide Aracely / *Autonomous University of Ciudad Juárez, Mexico*.....600
Maldonado-Macias, Aide Aracely / *Instituto Tecnológico de Ciudad Juárez, Mexico*.....1367
Maldonado-Macías, Aide Aracely / *Autonomous University of Ciudad Juárez, Mexico*.....66, 415, 439
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Martínez, Rosa María Reyes / *Instituto Tecnológico de Ciudad Juárez, Mexico*.....1367
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Montaudon-Tomas, Ivonne M. / *UPAEP Universidad, Mexico* 681
Moore-Southall, Trina / *California Lutheran University, USA* 825
Morales, Ángel Fabián Campoya / *Universidad Autónoma de Ciudad Juárez, Mexico* 543
Morales, Lilia-Cristina / *Tecnológico Nacional de México, Instituto Tecnológico de Tijuana, Mexico* 1339
Moura, Ana / *University of Aveiro, Aveiro, Portugal* 643
Mrugalska, Beata / *Poznan University of Technology, Poland* 242
Mumel, Damijan / *University of Maribor, Slovenia* 516
Muñoz-Ortiz, Marisol / *UPAEP Universidad, Mexico* 681
Mupepi, Clara / *Grand Valley State University, USA* 98
Mupepi, Kuda / *S. James School of Medicine, USA* 98
Mupepi, Tatenda / *S. James School of Medicine, USA* 98
Naim, Mohammad Faraz / *University of Petroleum & Energy Studies, India* 150
Narayana, Alamuri Surya / *Osmania University, India* 114
Nathai-Balkissoon, Marcia / *The University of the West Indies — St. Augustine, Trinidad and Tobago* 2086
Ngwenya, Bigboy / *Edith Cowan University, Perth, Australia* 2055
Nica, Elvira / *The Bucharest University of Economic Studies, Romania* 53
Niu, Yuanlu / *University of Arkansas, USA* 1904
Nogueira, Ludovico Soto / *Universidad Autonoma de Ciudad Juarez, Mexico* 585
Nwanna, Chinwe Rosabelle / *University of Lagos, Nigeria* 1255
Okogun-Odompley, Joy Nana / *Data Link Institute, Ghana* 1088
Okun, Olcay / *Hasan Kalyoncu, Turkey* 203
Omidele, Fehintola / *Johns Hopkins Bloomberg School of Public Health, USA* 2004
Omoruyi, Emma A. / *University of Texas Health Science Center at Houston, USA* 2004
Oosthuizen, Jacques / *Edith Cowan University, Perth, Australia* 2055
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Opiri, Jane A. / *University of Arkansas at Pine Bluff, USA* 1222
Otundo, Joseph O. / *University of Arkansas at Little Rock, USA* 1222
Palomo-Zurdo, Ricardo Javier / *CEU San Pablo University, Spain* 1945
Pandey, Shivani / *Mediterranean Shipping Company, India* 367
Pappa, Despoina / *Hygeia Hospital of Athens, University of West Attica, Greece* 912
Pata, Arminda / *University of Aveiro, Aveiro, Portugal* 643
Patel, Sachin / *TCS Research, Tata Consultancy Services, India* 707
Patil, Kavita / *Dhanwate National College, Nagpur, India* 1769
Patro, Chandra Sekhar / *Gayatri Vidya Parishad College of Engineering (Autonomous), India* 473, 495, 1141
Piñeiro-Cortes, Leidy Lorena / *EAN University, Colombia* 767
Pinto-López, Ingrid N. / *UPAEP Universidad, Mexico* 681
Poulose, Jeanne / *Christ Institute of Management, India* 1637
Pun, K. F. / *The University of the West Indies — St. Augustine, Trinidad and Tobago* 2086
Raghunath, K. Madhu Kishore / *National Institute of Technology Warangal, India* 1141
Ramraj, Andrisha Beharry / *University of KwaZulu-Natal, South Africa* 2069

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Reio Jr., Thomas G. / *Florida International University, Miami, USA* 1237
Reyes, Judith Lara / *University of Texas at El Paso, USA* 585
Robinson, Jeffrey A. / *Rutgers University, USA* 1963
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Rodríguez, Yordán / *University of Antioquia, Colombia* 1550
Rosenthal, Harrison M. / *University of Kansas, USA* 2019
Rožman, Maja / *University of Maribor, Slovenia* 1744
Sahoo, Kalpana / *Xavier University, India* 36
Şanta, Ana-Maria Iulia / *Bucharest University of Economic Studies, Romania* 53
Sarmah, Bijoylaxmi / *North-Eastern Regional Institute of Science and Technology, India* 137
Satapathy, Suchismita / *KIIT University, India* 620, 1508, 1577
Savic, Dalvony Duraes Alkmim / *University of West London, College of Comtemporary Arts, UK* 1834
Secules, Stephen / *Florida International University, USA* 1884
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Shimura, Akiyoshi / *Tokyo Medical University, Tokyo, Japan* 252
Shrivastava, Archana / *Jaypee Business School, Jaypee Institute of Information Technology, India* 1769
Singh, Meenakshi / *MMV BHU Varanasi, India* 2041
Soares, Joaquim / *Mid-Sweden University, Sweden* 1693
Solano, Tito Francisco / *EAN University, Colombia* 767
Sosa, Liliana Avelar / *Autonomous University of Ciudad Juárez, Mexico* 66
Stone, Suki / *National University, USA* 898
Strong, Alexandra Coso / *Florida International University, USA* 1884
Sugiura, Ko / *Keio University, Tokyo, Japan* 252
Swayze, Susan / *The George Washington University, USA* 1784
Tagne, Joel Stephan / *University of Ngaoundere, Cameroon* 1103
Tarannum, Nazia / *Chaudhary Charan Singh University, India* 2041
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Tomaselli, Gianpaolo / *University of Malta, Malta* 1693
Torres, Anália / *University of Lisbon, Portugal* 1043
Treven, Sonja / *University of Maribor, Slovenia* 516, 1744
Tureen, Amy / *University of Nevada, Las Vegas, USA* 1715
Valaskova, Katarina / *University of Zilina, Slovakia* 53
Valentine, Desree S. / *United States Army Reserve, USA* 1196
Valido, Susana / *Hospital do Espírito Santo de Évora, Portugal* 1392
Van Cleave, Alfred Kent / *University of Phoenix, USA* 1626
Vargas-Hernández, José G. / *University of Guadalajara, Mexico* 223
Vargas-Hernández, José G. G. / *University of Guadalajara, Mexico* 1637

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Yürcü, Gülseren / *Akdeniz University, Turkey* 1208
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Table of Contents

Preface xxv

Volume I

Section 1
Fundamental Concepts and Theories

Chapter 1
Future of Work and Its Implication on Employee Well-Being in the 4IR Era 1
Ethel N. Abe, University of KwaZulu-Natal, South Africa
Isaac Idowu Abe, Cape Peninsula University of Technology, South Africa
Olalekan Adisa, University of KwaZulu-Natal, Durban, South Africa

Chapter 2
The Dynamics of Workplace Relationships, Employee Well-Being, and the Fourth Industrial Revolution: Perspectives of Workplace Relationships and Industry 4.0 22
Isaac Idowu Abe, Cape Peninsula University of Technology, South Africa

Chapter 3
Organizational Well-Being: A New Theoretical Model and Recommendations for Future Research 36
Kalpana Sahoo, Xavier University, India

Chapter 4
Burnout: A Challenge for Companies in the Modern Business Environments 53
Elvira Nica, The Bucharest University of Economic Studies, Romania
Ana-Maria Iulia Şanta, Bucharest University of Economic Studies, Romania
Katarina Valaskova, University of Zilina, Slovakia
Maria Gabriela Horga, "Ovidius" University of Constanța, Romania

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Chapter 5
Considerations of the Mental Workload in Socio-Technical Systems in the Manufacturing Industry: A Literature Review 66
Manuel Alejandro Barajas Bustillos, Autonomous University of Ciudad Juárez, Mexico
Aide Aracely Maldonado-Macías, Autonomous University of Ciudad Juárez, Mexico
Jorge Luis García-Alcaraz, Universidad Autónoma de Ciudad Juárez, Mexico
Juan Luis Hernández Arellano, Autonomous University of Ciudad Juárez, Mexico
Liliana Avelar Sosa, Autonomous University of Ciudad Juárez, Mexico

Chapter 6
The Diversity Paradox 85
J. Jacob Jenkins, California State University, Channel Islands, USA

Chapter 7
Workforce Diversity: Gaining the Competitive Advantage 98
Kuda Mupepi, S. James School of Medicine, USA
Tatenda Mupepi, S. James School of Medicine, USA
Clara Mupepi, Grand Valley State University, USA

Chapter 8
Diversity Management Interventions for Enhancing Competitive Advantage: A Synthesis of Current Research and Literature 114
Alamuri Surya Narayana, Osmania University, India

Chapter 9
Antecedents and Consequences of Employee Engagement for a Diverse Workforce 137
Shampy Kamboj, Amity University, India
Bijoylaxmi Sarmah, North-Eastern Regional Institute of Science and Technology, India

Chapter 10
How Does Empowering Leadership Contribute to Organizational Commitment of Millennials? An Indian Perspective 150
Mohammad Faraz Naim, University of Petroleum & Energy Studies, India

Chapter 11
Conceptualizing Causative Factors of Workplace Cyberbullying on Working Women 164
Karthikeyan C., T. John College, Bengaluru, India

Chapter 12
The Prevention of Work-Related Risks: A Fundamental Principle for Organization With Purpose .. 185
Luis Gabriel Gutierrez Bernal, Fundación Universitaria del Area Andina, Colombia
Maria Alexandra Malagon Torres, Politecnico Grancolombiano, Colombia
Helga Ofelia Dworaczek Conde, Fundación Universitaria del Área Andina, Colombia

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Section 2
Development and Design Methodologies

Chapter 13
The Positive Face of Human Capital, Psychological Capital, and Well-Being 203
Olcay Okun, Hasan Kalyoncu, Turkey

Chapter 14
Microfinancial Collaborative Economies Business Models and Strategies for Quality of Life Improvement: Case studies for PROMUSAG and UBER 223
José G. Vargas-Hernández, University of Guadalajara, Mexico

Chapter 15
Lean Production and Its Impact on Worker Health: Force and Fatigue-Based Evaluation Approaches..... 242
Murray Gibson, Auburn University, USA
Beata Mrugalska, Poznan University of Technology, Poland

Chapter 16
How Does Schema Affect Stress and Productivity at the Workplace? Quantitative Analysis of Schema in the Occupational Setting 252
Ko Sugiura, Keio University, Tokyo, Japan
Akiyoshi Shimura, Tokyo Medical University, Tokyo, Japan

Chapter 17
Re-Conceptualizing Diversity Management: Organization-Serving, Justice-Oriented, or Both? 275
Marilyn Y. Byrd, University of Oklahoma, USA
Claretha Hughes, University of Arkansas, USA

Chapter 18
Proposing a Diversity Intelligence Training Framework for Leaders and Managers to Attract, Maintain, and Balance Mature Workers 303
Sheron Lawson, Wayland Baptist University, USA
Claretha Hughes, University of Arkansas, USA

Chapter 19
Employee Wellbeing English Language Proficiency a Key to Knowledge Sharing and Social Interaction 324
Muhammad Khaleel, Universiti Sains Malaysia, Malaysia
Shankar Chelliah, Universiti Sains Malaysia, Malaysia

Chapter 20
Disruption in HR Through Inclusive Emotional Culture: Key to Sustainable Growth in Indian Businesses 345
Nitu Ghosh, REVA University, India

EBSCOhost - printed on 2/8/2023 11:28 PM via . All use subject to https://www.ebsco.com/terms-of-use

Chapter 21
An Empirical Study of the Indian IT Sector on Typologies of Workaholism as Predictors of HR Crisis 367
Shivani Pandey, Mediterranean Shipping Company, India

Chapter 22
CSR and PSR Diversity Engagement Among Ethnic Minority Businesses (EMBs) Within the UK 390
Carlton Brown, University of Plymouth, UK

Chapter 23
Knowledge Management and Ergonomics Implementation in Manufacturing Systems: Development and Validation of a Questionnaire for Critical Success Factors 415
Aide Aracely Maldonado-Macías, Universidad Autónoma de Ciudad Juarez, Mexico
Cesar Roberto Alferez-Padron, Universidad Autónoma de Ciudad Juarez, Mexico
Jorge Luis García-Alcaraz, Universidad Autónoma de Ciudad Juarez, Mexico
Liliana Avelar-Sosa, Universidad Autónoma de Ciudad Juárez, Mexico

Chapter 24
Knowledge Management of Work Stress in Mexican Manufacturing Environments: Models of the Relationships Between Burnout and the Body Mass Index Among Middle and Senior Managers ... 439
Oziely Daniela Armenta-Hernández, Autonomous University of Ciudad Juárez, Mexico
Aide Aracely Maldonado-Macías, Autonomous University of Ciudad Juarez, Mexico
Jorge Luis García-Alcaraz, Autonomous University of Ciudad Juárez, Mexico
Miguel Angel Serrano-Rosa, Universidad de Valencia, Spain
Liliana Avelar-Sosa, Autonomous University of Ciudad Juarez, Mexico

Section 3
Tools and Technologies

Chapter 25
Employee Welfare Provisions: An Administration Tool to Enhance Employee Efficiency 473
Chandra Sekhar Patro, Gayatri Vidya Parishad College of Engineering (Autonomous), India

Chapter 26
Welfare Programs as a Strategy of Promoting Employees' Economic Growth and Work Productivity 495
Chandra Sekhar Patro, Gayatri Vidya Parishad College of Engineering (Autonomous), India

Volume II

Chapter 27
Factors Affecting Employees' Job Satisfaction and Psychological Health 516
Mateja Lorber, University of Maribor, Slovenia
Sonja Treven, University of Maribor, Slovenia
Damijan Mumel, University of Maribor, Slovenia

EBSCOhost - printed on 2/8/2023 11:28 PM via . All use subject to https://www.ebsco.com/terms-of-use

Chapter 28
Combined Methods for Physical and Mental Workload: Fatigue Evaluation – A Systematic Literature Review 543
Ángel Fabián Campoya Morales, Universidad Autónoma de Ciudad Juárez, Mexico
Juan Luis Hernández Arellano, Universidad Autónoma de Ciudad Juárez, Mexico
Elvia Luz González-Muñoz, Universidad de Guadalajara, Mexico

Chapter 29
Application of Biomechanics Instrumentation in Occupational Health Research 567
Sanjay M. Kotadiya, National Institute of Occupational Health, India
Joydeep Majumder, National Institute of Occupational Health, India
Sunil Kumar, National Institute of Occupational Health, India

Chapter 30
Exceeding the Recommended Energy Limits Due to Age and Gender in Occupational Aerobic Workloads 585
Cesar Omar Balderrama Armendariz, Universidad Autonoma de Ciudad Juarez, Mexico
Jose de Jesus Flores Figueroa, Universidad Autonoma de Ciudad Juarez, Mexico
Judith Lara Reyes, University of Texas at El Paso, USA
Ludovico Soto Nogueira, Universidad Autonoma de Ciudad Juarez, Mexico

Chapter 31
Ergonomic Bench to Decrease Postural Risk Level on the Task of Changing Forklift's Brake Pads: A Design Approach 600
Arturo Realyvásquez, Instituto Tecnológico de Tijuana, Mexico
Guadalupe Hernández-Escobedo, Instituto Tecnológico de Tijuana, Mexico
Aide Aracely Maldonado Macías, Autonomous University of Ciudad Juárez, Mexico

Chapter 32
An Ergonomic Analysis on Working Postures of Construction Site Workers: A Framework for Construction Site Workers 620
Suchismita Satapathy, KIIT University, India

Chapter 33
Applying Metaheuristics to Minimize Work-Related Musculoskeletal Disorders 643
Arminda Pata, University of Aveiro, Aveiro, Portugal
Ana Moura, University of Aveiro, Aveiro, Portugal

Chapter 34
Opportunities and Challenges of Using Mobile Applications for Workplace Health Promotion: A Qualitative Study 663
Maren Junker, Technical University of Munich, Germany
Markus Böhm, Technical University of Munich, Germany
Frederik Edwards, Technical University of Munich, Germany
Helmut Krcmar, Technical University of Munich, Germany

EBSCOhost - printed on 2/8/2023 11:28 PM via . All use subject to https://www.ebsco.com/terms-of-use

Chapter 35
Health and Wellbeing as Appreciative Inquiry in a Private University in Mexico 681
Ingrid N. Pinto-López, UPAEP Universidad, Mexico
Cynthia M. Montaudon-Tomas, UPAEP Universidad, Mexico
Ivonne M. Montaudon-Tomas, UPAEP Universidad, Mexico
Marisol Muñoz-Ortiz, UPAEP Universidad, Mexico

Section 4
Utilization and Applications

Chapter 36
People and the Digital Enterprise: Challenges and Approaches 707
Vivek Balaraman, TCS Research, Tata Consultancy Services, India
Sachin Patel, TCS Research, Tata Consultancy Services, India
Mayuri Duggirala, TCS Research, Tata Consultancy Services, India
Jayasree Raveendran, TCS Research, Tata Consultancy Services, India
Ravi Mahamuni, TCS Research, Tata Consultancy Services, India

Chapter 37
Institutionalizing Inclusive Markets as a Prerequisite to Inclusive Growth 742
Fakhri Issaoui, Le Laboratoire de Recherche (Prospective, Stratégies et Développement Durable PS2D), Faculté des Sciences Economiques et de Gestion de Tunis, Université Tunis El-Manar, Tunis, Tunisia
Mohamed Ben Abdelghaffar, Faculté de Droit et des Sciences Politiques de Tunis, Université Tunis El Manar, Tunis, Tunisia

Chapter 38
Who Will Take Care of Me? The Future of Human Resources in Anaesthesiology, Critical Care, and Emergency Medicine in Europe. 752
Cristina Honorato-Cia, School of Medicine, University of Navarra, Spain
Stefan De Hert, Ghent University, Belgium
Edoardo De Robertis, Department of Surgical and Biomedical Sciences, University of Perugia, Perugia, Italy
Ioana Grigoras, University of Medicine and Pharmacy "Grigore T. Popa" Iasi, Romania

Chapter 39
Cultural Diversity, Negotiation, and Organizational Leadership: Their Relationship With the Competitiveness of Colombian Companies in a Global Context 767
Leidy Lorena Piñeiro-Cortes, EAN University, Colombia
Merly Maria Bernal, Universidad de Celaya, Mexico
Tito Francisco Solano, EAN University, Colombia
Adolfo Hernando Hernández Hernández, EAN University, Colombia

Chapter 40
Applying Diversity-Intelligent Organizational Strategies for Competitive Advantage 796
Claretha Hughes, University of Arkansas, USA

EBSCOhost - printed on 2/8/2023 11:28 PM via . All use subject to https://www.ebsco.com/terms-of-use

Chapter 41
Sustaining and Retaining the Diversity Practitioner 825
Trina Moore-Southall, California Lutheran University, USA

Chapter 42
An Approach to Diversity and Cultural Competence Curriculum in Public Administration 840
Bridgett A. King, Auburn University, USA

Chapter 43
The Interactions Between Cultural Intelligence, Job Burnout, and Task Performance of Expatriates 858
Çağlar Doğru, Ufuk University, Turkey

Chapter 44
Relationships Between Mental Workload, Burnout, and Job Performance: A Research Among Academicians 877
Meltem Akca, Alanya Alaaddin Keykubat University, Turkey
Mübeyyen Tepe Küçükoğlu, Trakya University, Turkey

Chapter 45
Defective Decision Making: Beginning Teacher Early Burnout From Catastrophic Career Choices 898
Unoma B. Comer, National University, USA
Suki Stone, National University, USA

Chapter 46
Association of Occupational Burnout and Nursing Errors With Patient Safety: A Systemic Review 912
Despoina Pappa, Hygeia Hospital of Athens, University of West Attica, Greece
Chrysoula Dafogianni, University of West Attica, Greece

Chapter 47
Burnout and Stressors as Influencers on Work Engagement Among Law Enforcement Agents in Selected Cities 926
Mihir Joshi, Gurukula Kangri Vishwavidyalaya, India

Chapter 48
The Contribution of Neuroscience and Health Psychology to Macroergonomics: Focusing on Workers as Active Agents 942
Miguel Angel Serrano-Rosa, Universidad de Valencia, Spain
Francisco Molins, Universidad de Valencia, Spain

Chapter 49
Industry Process Safety: Major Accident Risk Assessment 960
Ales Bernatik, VSB – Technical University of Ostrava, Czech Republic

EBSCOhost - printed on 2/8/2023 11:28 PM via . All use subject to https://www.ebsco.com/terms-of-use

Chapter 50
Knowledge Management Influence on Safety Management Practices: Evidence from Construction Industry 996
M.D. Deepak, National Institute of Construction Management and Research, Pune, India
Mahesh Gangadhar, National Institute of Technology, Karnataka, India
Medi Narotham Kumar, National Institute of Technology, Karnataka, India

Chapter 51
Regulating Occupational Health and Safety in EU and China: From a Comparative Law Perspective 1021
Kai Liu, Jiangsu Normal University, China

Chapter 52
Gender Awareness and Women Managers in Tourism: Perceptions of Inequality and What Could Be Done 1043
Inês Carvalho, Universidade Europeia, Portugal
Carlos Costa, GOVCOPP, University of Aveiro, Portugal
Anália Torres, University of Lisbon, Portugal

Volume III

Chapter 53
Women's Employment in Turkey's ICT Sector: An Examination From a Social Inclusion Perspective 1064
Selda Gorkey, Istanbul Kultur University, Turkey

Section 5
Organizational and Social Implications

Chapter 54
Impact of Workplace Diversity on Employee Performance: A Case of Some Selected Private Universities in Ghana 1088
Juliana Serwaa Andoh, Kwame Nkrumah University of Science and Technology, Ghana
Benjamin Ghansah, Data Link Institute, Ghana
Joy Nana Okogun-Odompley, Data Link Institute, Ghana
Ben-Bright Benuwa, Data Link Institute, Ghana

Chapter 55
Cultural Diversity and Performance of Cameroonian Companies 1103
Joel Stephan Tagne, University of Ngaoundere, Cameroon
Jean Pierre Evou, University of Yaounde II, Cameroon

Chapter 56
Measuring the Different Facets of Diversity Using Quantitative Methods 1118
Gargi Banerjee, Xavier University, India

EBSCOhost - printed on 2/8/2023 11:28 PM via . All use subject to https://www.ebsco.com/terms-of-use

Chapter 57
Employee Welfare Measures: The Impact on Employees' Efficacy and Organizations Productivity 1141
Chandra Sekhar Patro, Department of Management Studies, Gayatri Vidya Parishad College of Engineering (A), India
K. Madhu Kishore Raghunath, National Institute of Technology Warangal, India

Chapter 58
Examination of Quality of Life in Workplace Environments 1161
Lesley Clack, University of Georgia, USA

Chapter 59
Effects on Employee Motivation of Working Conditions in National/International F&B Enterprises: Kirklareli Case 1175
İlke Başarangil, Kırklareli University, Turkey
Emre Altıntaş, Kırklareli University, Turkey

Chapter 60
The Effect of Wellness Programs on Long-Term Contract Employees' Workplace Stress, Absenteeism, and Presenteeism 1196
Desree S. Valentine, United States Army Reserve, USA
Susan Ferebee, Purdue University, West Lafayette, USA
Keri L. Heitner, All Aspects Research, Amherst, USA

Chapter 61
Leisure and Wellness Perceptions of Tourism Workers in Work-Life Balance 1208
Gülseren Yürcü, Akdeniz University, Turkey
Ülker Çolakoğlu, Adnan Menderes Üniversity, Turkey

Chapter 62
Foreign Education, Underemployment, and Wellness: Lived Experiences of African Immigrants in the USA 1222
Joseph O. Otundo, University of Arkansas at Little Rock, USA
Jane A. Opiri, University of Arkansas at Pine Bluff, USA

Chapter 63
Workplace Incivility and Job Satisfaction: Mediating Role of Emotion Management 1237
Rose Opengart, Texas A&M, Signal Mountain, USA
Thomas G. Reio Jr., Florida International University, Miami, USA
Wei Ding, Florida International University, Miami, USA

Chapter 64
Discrimination Against People With HIV and AIDS in the Workplace: A Lagos State Example ... 1255
Chinwe Rosabelle Nwanna, University of Lagos, Nigeria

EBSCOhost - printed on 2/8/2023 11:28 PM via . All use subject to https://www.ebsco.com/terms-of-use

Chapter 65
Working With Lesbian, Gay, Bisexual, and Transgender People in Care Relationships 1276
Gabriel Aleksandrs, Carers Victoria, Australia

Chapter 66
Gender Discrimination in Tourism Industry 1304
Aslı Albayrak, Istanbul Arel University, Turkey

Chapter 67
Work Role Stress and Employee Outcomes: Mediating Role of Job Satisfaction 1324
Bindu Chhabra, International Management Institute, India

Chapter 68
Mental Workload Assessment and Its Effects on Middle and Senior Managers in Manufacturing Companies 1339
Arturo Realyvásquez-Vargas, Tecnológico Nacional de México, Instituto Tecnológico de Tijuana, Mexico
Emigdio Z-Flores, Tecnológico Nacional de México, Instituto Tecnológico de Tijuana, Mexico
Lilia-Cristina Morales, Tecnológico Nacional de México, Instituto Tecnológico de Tijuana, Mexico
Jorge Luis García-Alcaraz, Autonomous University of Ciudad Juarez, Mexico

Chapter 69
Work Stress and Psychosocial Factors in the Manufacturing Industry: A Literature Review 1367
Mónica Gabriela Gutiérrez Hernández, Instituto Tecnológico de Ciudad Juárez, Mexico
Rosa María Reyes Martínez, Instituto Tecnológico de Ciudad Juárez, Mexico
Aide Aracely Maldonado-Macias, Instituto Tecnológico de Ciudad Juárez, Mexico
Jaime Sánchez Leal, Instituto Tecnológico de Ciudad Juárez, Mexico
Jorge De La Riva Rodríguez, Instituto Tecnológico de Ciudad Juárez, Mexico

Chapter 70
Burnout Among Formal Caregivers and Risk of Violence Against Institutionalized Elderly 1392
Susana Valido, Hospital do Espírito Santo de Évora, Portugal
Ermelinda do Carmo Caldeira, Universidade de Évora, Portugal
Felismina Mendes, Universidade de Évora, Portugal

Chapter 71
The Impact of the Attitude of Medical Staff From Burnout on the Level of Ongoing Medical Services 1408
Anita Wójcik, 10 Military Hospital, Poland

EBSCOhost - printed on 2/8/2023 11:28 PM via . All use subject to https://www.ebsco.com/terms-of-use

Chapter 72
Burnout and Obesity in Middle and Upper Management in the Manufacturing Industry of Baja California 1435
Sharon Idali Macias Velasquez, Universidad Autónoma de Baja California, Mexico
Yolanda Angelica Baez-Lopez, Universidad Autónoma De Baja California, Mexico
Aidé Aracely Maldonado-Macías, Universidad Autónoma de Ciudad Juárez, Mexico
Jorge Limon-Romero, Universidad Autónoma de Baja California, Mexico
Diego Tlapa, Universidad Autónoma de Baja California, Mexico

Chapter 73
Analysis of Role Stress in the Indian IT Industry 1454
Shubhangini Rathore, IBS Gurgaon, India

Chapter 74
Effects of Human Factors in Process Safety: Analyses of Chemical Industrial Case Studies 1477
Gargi Bhattacharjee, University of Calcutta, India & Prasanta Chandra Mahalanobis Mahavidyalaya, India
Sudip Kumar Das, University of Calcutta, India

Chapter 75
Occupational Health and Safety Hazards in Agriculture: A Study on the Risks Involved for the Sustainability 1508
Debesh Mishra, KIIT University, India
Suchismita Satapathy, KIIT University, India

Chapter 76
Exploring Blue- and White-Collar Employees' Well-Being at Work System: Differences in Indicators of Physical and Psychosocial Conditions of Occupational Groups 1526
Seppo Tapio Vayrynen, University of Oulu, Oulu, Finland
Heli Katariina Kiema-Junes, University of Oulu, Oulu, Finland

Chapter 77
Individual Risk Assessment (ERIN): Method for the Assessment of Workplace Risks for Work-Related Musculoskeletal Disorders 1550
Yordán Rodríguez, University of Antioquia, Colombia

Volume IV

Chapter 78
Prevalence of Musculoskeletal Disorders of Odisha Farmers in Selected Agricultural Tasks: A Critical Analysis During Seeding, Fertilizing, and Weeding of Crops 1577
Debesh Mishra, KIIT University (Deemed), India
Suchismita Satapathy, KIIT University (Deemed), India

EBSCOhost - printed on 2/8/2023 11:28 PM via . All use subject to https://www.ebsco.com/terms-of-use

Section 6
Managerial Impact

Chapter 79
Work Leadership, Occupational Health, and Safety 1608
Gabriel Akinbode, University of Lagos, Nigeria

Chapter 80
Corporate Governance and the Future of Work, Work-Family Satisfaction, and Employee Well-Being 1626
Alfred Kent Van Cleave, University of Phoenix, USA

Chapter 81
Management of Intercultural Relations in an Intercultural Organization 1637
José G. G. Vargas-Hernández, University of Guadalajara, Mexico
Jeanne Poulose, Christ Institute of Management, India

Chapter 82
Launching Diversity-Intelligent Strategies in Organizations: A Leadership Development Perspective 1663
Claretha Hughes, University of Arkansas, USA

Chapter 83
Responsible Leadership Behaviour as a Determinant of Stakeholders' Health and Well-Being: A Review and Conceptual Framework 1693
Gloria Macassa, University of Gävle, Sweden
Gianpaolo Tomaselli, University of Malta, Malta
Joaquim Soares, Mid-Sweden University, Sweden

Chapter 84
The Role of the Supervisor in Creating and Maintaining an Emotionally Healthy Workplace..... 1715
Amy Tureen, University of Nevada, Las Vegas, USA

Chapter 85
Engaging Employees With Positivity: The Role of Appreciative Inquiry in Employee Sustainability..... 1731
Shravana Bardhan, George College of Management and Science, India

Chapter 86
The Conceptual Model of Managing Older Employees to Achieve Their Work Engagement..... 1744
Maja Rožman, University of Maribor, Slovenia
Sonja Treven, University of Maribor, Slovenia

EBSCOhost - printed on 2/8/2023 11:28 PM via . All use subject to https://www.ebsco.com/terms-of-use

Chapter 87
Women Managers and Generations: A Study of Obstacles 1769
Kanchan Chandar Tolani, Shri Ramdeobaba College of Engineering and Management, Nagpur, India
Pritam Bhadade, Shri Ramdeobaba College of Engineering and Management, Nagpur, India
Kavita Patil, Dhanwate National College, Nagpur, India
Archana Shrivastava, Jaypee Business School, Jaypee Institute of Information Technology, India

Chapter 88
Twenty-First Century Issues Impacting Turnover of IT Professionals: From Burnout and Turnover to Workplace Wellbeing 1784
Valerie Ford, ISP Global Communications LLC, USA
Susan Swayze, The George Washington University, USA

Chapter 89
Innovation Through Diversity and Inclusion: A Roadmap for Higher Education Information Technology Leaders 1811
Brenna Deanne Miaira Kutch, Portland State University, USA
Juliana Sayumi Miaira Kutch, Portland State University, USA

Chapter 90
Cultural Norms and Expectations Within the Hospitality Industry 1834
Dalvony Duraes Alkmim Savic, University of West London, College of Comtemporary Arts, UK
Mihaela Dariescu, University of Roehampton, UK

Section 7
Critical Issues and Challenges

Chapter 91
Managing Generational Diversity: Lessons German Companies Can Learn From Silicon Valley 1852
Martin Klaffke, Hochschule für Technik und Wirtschaft Berlin, Germany

Chapter 92
Veterans Should Be Included Too: Strategies for Promoting Diversity of Veterans in Organizations 1866
Yvonne O. Hunter-Johnson, North Carolina A&T University, USA

Chapter 93
Who Engineering Includes Impacts How Engineers Work: Diversity Challenges and Design Thinking Solutions 1884
Stephen Secules, Florida International University, USA
Alexandra Coso Strong, Florida International University, USA
Trina Fletcher, Florida International University, USA

EBSCOhost - printed on 2/8/2023 11:28 PM via . All use subject to https://www.ebsco.com/terms-of-use

Chapter 94
Reducing Lookism in the Workplace 1904
Kai Wang, Universitat Autònoma de Barcelona, Spain
Yuanlu Niu, University of Arkansas, USA

Chapter 95
Gender Differences in Quality of Work Life: An Empirical Study 1922
Shivani Agarwal, KIET Group of Institutions, Delhi-NCR, Ghaziabad, India

Chapter 96
Gender and Labor Market: A Review From the Perspective of Insurance Premiums Incentives, Supports, and Deductions in Turkey 1931
Cahide Göğüsdere, Gazi University, Turkey

Chapter 97
Gender Diversity in the Senior Management of Large Technology Companies 1945
Yakira Fernández-Torres, University of Extremadura, Spain
Ricardo Javier Palomo-Zurdo, CEU San Pablo University, Spain
Milagros Gutiérrez-Fernández, University of Extremadura, Spain

Chapter 98
Does a Federal Glass Ceiling Have Differential Effects on Female and Male Technology Entrepreneurs? 1963
Todd M. Inouye, University of Hawai'i at Hilo, USA
Jeffrey A. Robinson, Rutgers University, USA
Amol M. Joshi, Oregon State University, USA

Chapter 99
Safety of Women Journalists in Nigerian News Media: Exposing the Hushed Gender-Based Discriminations 1980
Adamkolo Mohammed Ibrahim, University of Maiduguri, Nigeria
Nassir Abba-Aji, University of Maiduguri, Nigeria
Mohammed Alhaji Adamu, University of Maiduguri, Nigeria
Phuong Thi Vi, University of Sciences, Thai Nguyen University, Vietnam

Chapter 100
Resident Physician and Medical Academic Faculty Burnout: A Review of Current Literature..... 2004
Emma A. Omoruyi, University of Texas Health Science Center at Houston, USA
Fehintola Omidele, Johns Hopkins Bloomberg School of Public Health, USA

Chapter 101
(Non)existent Laws of Workplace Cyberbullying: Limitations of Legal Redress in a Digitized Market 2019
Harrison M. Rosenthal, University of Kansas, USA
Genelle I. Belmas, University of Kansas, USA

EBSCOhost - printed on 2/8/2023 11:28 PM via . All use subject to https://www.ebsco.com/terms-of-use

Chapter 102
Pesticides as an Occupational Hazard Facts and Figures 2041
Nazia Tarannum, Chaudhary Charan Singh University, India
Meenakshi Singh, MMV BHU Varanasi, India
Ranjit Hawaldar, Centre for Materials for Electronics Technology, India

Chapter 103
A Review of Heat Stress Policies in the Context of Climate Change and Its Impacts on Outdoor Workers: Evidence From Zimbabwe..... 2055
Bigboy Ngwenya, Edith Cowan University, Perth, Australia
Jacques Oosthuizen, Edith Cowan University, Perth, Australia
Martyn Cross, Edith Cowan University, Perth, Australia
Kwasi Frimpong, Edith Cowan University, Perth, Australia
Cynthia Nombulelo Chaibva, National University of Science and Technology, Bulawayo, Zimbabwe

Section 8
Emerging Trends

Chapter 104
Appraising the Future of Employee Health and Wellness Programmes in the Fourth Industrial Revolution: Wellness Programmes 2069
Andrisha Beharry Ramraj, University of KwaZulu-Natal, South Africa
John Amolo, University of KwaZulu-Natal, South Africa

Chapter 105
E-Government of Occupational Safety and Health: Improvement Prospects for a Developing Nation..... 2086
Marcia Nathai-Balkissoon, The University of the West Indies — St. Augustine, Trinidad and Tobago
K. F. Pun, The University of the West Indies — St. Augustine, Trinidad and Tobago

Chapter 106
Trends in Macroergonomics Applications for Improved Work Systems 2111
Karina Cecilia Arredondo, Universidad Autonóma de Baja California, Mexico
Arturo Realyvásquez, Instituto Tecnológico de Tijuana, Mexico
Guadalupe Hernández-Escobedo, Instituto Tecnológico de Tijuana, Mexico

Index..... xxix

EBSCOhost - printed on 2/8/2023 11:28 PM via . All use subject to https://www.ebsco.com/terms-of-use

Preface

With previous generations remaining longer in the workforce, and new generations starting to enter, dynamic and varied values are emerging amongst employees that must be maintained by industries to succeed. There is concern that the recent push for developing more inclusive and diverse workforces—an asset to organizational efficiency, productivity, and culture—will be waylaid due to the recent COVID-19 pandemic, while others maintain that the recent push for diversity and equity amongst all industries will lead to greater opportunities than ever before. The recent COVID-19 pandemic has also emphasized the importance of safety procedures within the workplace and called into question organizations' abilities and roles in mandating certain safety procedures while also bringing to light issues of burnout, stress, and the overall mental wellbeing of employees. Ensuring inclusive spaces and a safe workplace environment is essential for a happy workforce and overall business success. It is important that current research is compiled that sheds light on the advancements being made in promoting diversity and safety in the modern workforce.

Staying informed of the most up-to-date research trends and findings is of the utmost importance. That is why IGI Global is pleased to offer this four-volume reference collection of reprinted IGI Global book chapters and journal articles that have been handpicked by senior editorial staff. This collection will shed light on critical issues related to the trends, techniques, and uses of various applications by providing both broad and detailed perspectives on cutting-edge theories and developments. This collection is designed to act as a single reference source on conceptual, methodological, technical, and managerial issues, as well as provide insight into emerging trends and future opportunities within the field.

The *Research Anthology on Changing Dynamics of Diversity and Safety in the Workforce* is organized into eight distinct sections that provide comprehensive coverage of important topics. The sections are:

1. Fundamental Concepts and Theories;
2. Development and Design Methodologies;
3. Tools and Technologies;
4. Utilization and Applications;
5. Organizational and Social Implications;
6. Managerial Impact;
7. Critical Issues and Challenges; and
8. Emerging Trends.

The following paragraphs provide a summary of what to expect from this invaluable reference tool.

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Section 1, "Fundamental Concepts and Theories," serves as a foundation for this extensive reference tool by addressing crucial theories essential to understanding the concepts and uses of diversity and safety in a multitude of industries. Opening this reference book is the chapter "Future of Work and Its Implication on Employee Well-Being in the 4IR Era" by Prof. Ethel N. Abet of University of KwaZulu-Natal, South Africa; Prof. Isaac Idowu Abe of Cape Peninsula University of Technology, South Africa; and Prof. Olalekan Adisa of University of KwaZulu-Natal, Durban, South Africa, which discusses the incessant change and unpredictable nature of capitalism that often leads to job insecurity and loss. This first section ends with the chapter "The Prevention of Work-Related Risks" by Prof. Luis Gabriel Gutierrez Bernal of Fundación Universitaria del Area Andina, Colombia; Prof. Maria Alexandra Malagon Torres of Politecnico Grancolombiano, Colombia; and Prof. Helga Ofelia Dworaczek Conde of Fundación Universitaria del Área Andina, Colombia, which presents how security and safety in the workplace, humanistic management, and humanistic psychology have become fundamental pillars for the fulfillment of business objectives and the intervention on social and environmental issues, all the while recognizing human talent as the main axis for organizational development..

Section 2, "Development and Design Methodologies," presents in-depth coverage of the design and development of diversity and safety practices for their use in different industries. This section starts with "The Positive Face of Human Capital, Psychological Capital, and Well-Being" by Prof. Olcay Okun of Hasan Kalyoncu, Turkey, which analyzes the relation between positive psychology, psychological capital, and well-being. This section ends with the chapter "Knowledge Management of Work Stress in Mexican Manufacturing Environments: Models of the Relationships Between Burnout and the Body Mass Index Among Middle and Senior Managers" by Profs. Aide Aracely Maldonado-Macías and Oziely Daniela Armenta-Hernández of Autonomous University of Ciudad Juarez, Mexico; Prof. Miguel Angel Serrano-Rosa of Universidad de Valencia, Spain; and Profs. Liliana Avelar-Sosa and Jorge Luis García-Alcaraz of Autonomous University of Ciudad Juárez, Mexico, which presents a knowledge management perspective to propose a pair of structural models to determine the relationship between burnout syndrome (BS) and body mass index (BMI) among high and middle managers of Mexican maquiladoras.

Section 3, "Tools and Technologies," explores the various tools and technologies used in the implementation of diversity and safety for various workplace settings. This section begins with "Employee Welfare Provisions: An Administration Tool to Enhance Employee Efficiency" by Prof. Chandra Sekhar Patro of Gayatri Vidya Parishad College of Engineering (Autonomous), India, which focuses on determining the various employee welfare provisions adopted by different private organizations and its influence on the employee's satisfaction and effectiveness. This section ends with the chapter "Health and Wellbeing as Appreciative Inquiry in a Private University in Mexico" by Profs. Cynthia M. Montaudon-Tomas, Ingrid N. Pinto-López, Ivonne M. Montaudon-Tomas, and Marisol Muñoz-Ortiz of UPAEP Universidad, Mexico, which discusses organizational wellbeing as both a strategy and a responsibility, especially in recent times, when the line between work and life seems to be blurring, and there has been an increased concern about the role that work plays in the health and wellbeing of employees.

Section 4, "Utilization and Applications," describes how safety and diversity procedures are applied in diverse industries. The opening chapter in this section, "People and the Digital Enterprise: Challenges and Approaches," by Profs. Vivek Balaraman, Sachin Patel, Mayuri Duggirala, Jayasree Raveendran, and Ravi Mahamuni of TCS Research, Tata Consultancy Services, India, examines three representative people-related focus areas for the digital enterprise, enhancing workplace wellbeing, enabling continuous learning and compliance to information security. This section ends with the chapter "Women's Employment in Turkey's ICT Sector: An Examination From a Social Inclusion Perspective" by Prof.

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Selda Gorkey of Istanbul Kultur University, Turkey, which examines women's employment in Turkey's ICT sector from 2009 to 2016 from a social inclusion perspective by using various indicators.

Section 5, "Organizational and Social Implications," includes chapters discussing the impact of diversity and safety procedures on organizational and employee performance and wellbeing. The chapter "Impact of Workplace Diversity on Employee Performance: A Case of Some Selected Private Universities in Ghana" by Profs. Ben-Bright Benuwa, Joy Nana Okogun-Odompley, and Benjamin Ghansah of Data Link Institute, Ghana and Prof. Juliana Serwaa Andoh of Kwame Nkrumah University of Science and Technology, Ghana, explores how the milieu of workplace diversity affects the relationship between employee and performance. This section ends with the chapter "Prevalence of Musculoskeletal Disorders of Odisha Farmers in Selected Agricultural Tasks: A Critical Analysis During Seeding, Fertilizing, and Weeding of Crops" by Profs. Debesh Mishra and Suchismita Satapathy of KIIT University (Deemed), India, which provides an extensive review of the literature on the application of cuckoo search (CS) methodology, and its application for the optimization of agricultural pesticide sprayers for maximum efficiency was suggested.

Section 6, "Managerial Impact," presents the strategies and best practices for managers to implement diversity and safety into their workplace culture. Starting this section is "Work Leadership, Occupational Health, and Safety" by Prof. Gabriel Akinbode of University of Lagos, Nigeria, which provides an exhaustive discourse on the relevance of occupational health and safety systems in modern day workplaces as well as the nexus between management leadership and occupational health and safety. This section ends with the chapter "Cultural Norms and Expectations Within the Hospitality Industry" by Prof. Mihaela Dariescu of University of Roehampton, UK and Prof. Dalvony Duraes Alkmim Savic of University of West London, College of Contemporary Arts, UK, which defines and discusses culture and cross-culture management, explains the importance of understanding multicultural perspectives, and discusses the managerial approaches of managing workforce diversity and cultural diversity.

Section 7, "Critical Issues and Challenges," presents coverage of academic and research perspectives on challenges to implementing diversity and safety practices in different industries and workplace settings. Starting this section is "Managing Generational Diversity: Lessons German Companies Can Learn From Silicon Valley" by Prof. Martin Klaffke of Hochschule für Technik und Wirtschaft Berlin, Germany, which discusses United States diversity practices and how they may be implemented within a German setting in the wake of a dramatic demographic change and shifting of workplace values. This section ends with the chapter "A Review of Heat Stress Policies in the Context of Climate Change and Its Impacts on Outdoor Workers: Evidence From Zimbabwe" by Profs. Kwasi Frimpong, Bigboy Ngwenya, Jacques Oosthuizen, and Martyn Cross of Edith Cowan University, Perth, Australia and Prof. Cynthia Nombulelo Chaibva of National University of Science and Technology, Bulawayo, Zimbabwe, which outlines the state of climate and heat stresses in Zimbabwe as benchmarked against other African countries and France. It further summarizes outdoor workers' susceptibility to heat exposure and the need for the Zimbabwean Government to develop policies to ensure the health and safety of an increasing population of outdoor workers in Zimbabwe.

Section 8, "Emerging Trends," highlights areas for future research within this field. Opening this final section is the chapter "Appraising the Future of Employee Health and Wellness Programmes in the Fourth Industrial Revolution: Wellness Programmes" by Profs. John Amolo and Andrisha Beharry Ramraj of University of KwaZulu-Natal, South Africa, which examines and discusses employee wellness as a strategy that deals with enabling employee welfare. A healthy workforce enhances employee wellness. This section ends with the chapter "Trends in Macroergonomics Applications for Improved Work

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Systems" by Profs. Arturo Realyvásquez and Guadalupe Hernández-Escobedo of Instituto Tecnológico de Tijuana, Mexico and Prof. Karina Cecilia Arredondo of Universidad Autonóma de Baja California, Mexico, which focuses on the analysis of subsystems and work processes, which can be assessed both up and down the organizational hierarchy from intermediate levels, and also, up and down some changes may be done to ensure the work system design is harmonized.

Although the primary organization of the contents in this multivolume work is based on its eight sections, offering a progression of coverage of the important concepts, methodologies, technologies, applications, social issues, and emerging trends, the reader can also identify specific contents by utilizing the extensive indexing system listed at the end of each volume. As a comprehensive collection of research on the latest findings related to workplace diversity and safety, the *Research Anthology on Changing Dynamics of Diversity and Safety in the Workforce* provides researchers, human resources personnel, managers, safety officers, policymakers, CEOs, students, professors, and academicians with a complete reference source that highlights the challenges and opportunities for developing an inclusive and safe workforce. Given the vast number of issues concerning usage, failure, success, strategies, and applications of workplace diversity and occupational safety in modern technologies and processes, the *Research Anthology on Changing Dynamics of Diversity and Safety in the Workforce* encompasses the most pertinent research on the impacts and development of a diverse and safe workforce.

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Section 1

Fundamental Concepts and Theories

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Chapter 1
Future of Work and Its Implication on Employee Well-Being in the 4IR Era

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ABSTRACT

Capitalist corporations seek ever-new opportunities for trade and gain. As competition intensifies within markets, profit-seeking corporations innovate and diversify their products in an unceasing pursuit of new market niches. The incessant changes and unpredictable nature of capitalism often leads to insecurity regarding job loss. Job insecurity has been empirically proven to have negative effects on individuals and organisations. It associates to reduced job satisfaction and decreased mental health. A longitudinal Swedish study showed an indirect effect of trust on job satisfaction and mental health of employees. The advent of AIs, humanoids, robotics, and digitization present reason for employees to worry about the future of their work. A recent study conducted by the McKinsey Global Institute reports that by 2030, a least 14% of employees globally could need changing their careers as a result of the rapid rate of digitization, robotics, and advancement in artificial intelligence disruptions in the world of work.

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INTRODUCTION

Presently, the world of work is experiencing major outcomes from the change process. The speed of change processes and the size of such changes are drawing attention to the need to transform the world of work. Organisations are working hard to understand and react efficiently to the emerging challenges. For instance, the "Future of Work Initiative" (FWI) by the International Labour Organisation (ILO) is one of such efforts. The FWI is designed to assist the ILO to enhance her social justice mandate. Management of proactive organisations need to engage extensive process of deliberations on the future of work as the core of human resource consideration. Discussions and actions on the concept should be broadly based on making the future of work visible and promoting practical political willingness to engage; as well as giving attention and structure to strategies that immediately tackle the diverse and complicated challenges (ILO-DG, 2015). Where these concepts underpin discussions on the future of work, success is expected to be the resultant factor.

In considering the future of work, some pertinent questions to be asked should include but not limited to matters associated with; capacity to create or destroy jobs annually, implications of job creation/ or destruction on existing policies, priorities and controls, repositioning work in societies, income distribution, managing the effect of technological advancement on workforce, with the emergence of humanoids, robotics and artificial intelligence (AIs) – are we expecting jobs disaster or jobs prospect? (Ryder, 2015), and the implications of all these on employee health and wellness.

It is becoming predominantly clear that the advancement of technology and improvement in ways of doing things continue to provide technological reasons why routinised jobs that do not need mental inputs should be automated. In this context, Ryder (2015) asks; *So how do we deal with technologies? How do we deal with the dissolution of the employment relationship?* The answers to these questions could be unsettling; technologies will deal with man in the workplace in both positive and negative ways. It will dictate skills, new skills and need to acquire new skills. Many people will lose their permanent employment and will need to get new skills (reskill) or additional (upskill) skills to be able to engage in part-time employment in the new world of work. Employment relationships will change.

It does not make sense to examine the 4IR and the future of work without looking at the earlier industrial revolutions. The need to improve the way in which work is done efficiently paved way for the revolutions.

Background of the Industrial Revolutions

Over time, men mastered industry by not only depending on mechanical evolution but through the reinvention of the machines as novel resources and using them as tools. By this, industry is promoted through qualitative developments whose outcomes impact mankind overwhelmingly and they named the occasional entrenchment in any given period "revolutions".

The first industrial revolution (era of the emergence of steam engine), denotes the period in the late 18th century (1765) that witnessed the transformation of mainly rural, agricultural cultures in Europe and America into urban, developed and industrialised societies. Handmade commodities totally produced by human effort began to be produced in large quantities by machines in plants as a result of the introduction of mechanised techniques in the textile, ironmaking and other trades. This revolution began in Britain in the early 1800's.

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The second industrial revolution (age of science and mass technology) began in the late 19th century (1870) and continued to early 20th century and is reputed to have introduced the most changes into the world. It brought growing cities, sprawling factories and ended the regulation of people's lives by the sun (Freeman, 2018). It birthed fast advancement in the manufacture of steel, use of chemical compounds and electricity to power manufacturing processes including arms and consumer goods produced massive proportions. It created ease in transportation (using train, cars and bicycles); information was spread faster through newspapers, radio and telegram. All these made life and living faster. It was the period when a class of rich businessmen and well-off middle class was created. Migration to the urban areas by workers from all over the world and rural dwellers of America's farming communities and villages was prominent. Work was at the centre of all this and according to Freeman (2018), individuals who had control of their lives and whose work revolved around times and seasons had to work in factories that were fixed, and clock regulated. The second industrial revolution midwifed mass production in industrial and consumer products.

The way information is transmitted, business is done, and people interact was changed by the third industrial revolution (rise of digital technology) via the digital communications technology and internet. This commenced in the 20th century (1969) and witnessed the rise of electronics (microchip and transistor, processors and telecommunications. The 3rd industrial revolution orchestrated high-level automation in industrial production processes through programmes and robotics.

Summarily, the first industrial revolution utilised water and steam to industrialize production, the second made use of electrical energy in creating bulk production while the third revolution utilised microchip and information technology to power production.

The matter of a fourth industrial revolution is a topical issue today. While some people argue that we are now entering it, others question its existence. However, it is a revolution that builds on the 3rd industrial revolution and the digital revolution ongoing since the middle of last century. Expansion in this revolution is exponential featuring an unprecedented integration of technology that distorts physical, digital and biological domains to totally displace industries globally (Um, 2019; Galli, 2018; Bertola, & Teunissen, 2018). This is expected to generally impact production, management and governmental processes. Robots, humanoids, Artificial Intelligence, Biotechnology, Big Data, Cloud Computing and Autonomous vehicles among many others are altering human concepts of life and perception (Tiddi, Bastianelli, Daga, d'Aquin, & Motta, 2019; Vermesan, Bröring, Tragos, Serrano, Bacciu, Chessa, & Simoens, 2017).

Below is a presentation of the four industrial revolutions

Table 1. Industrial revolutions one to four: the level of complexity

Industrial Revolutions	Level of Complexity	Time Period
First Industrial Revolution	The mechanical production facilities using water and steam power	End of 19th century
Second Industrial Revolution	diversified mass production using electric energy	Beginning of 20th century
Third Industrial Revolution	further automation of production through use of electronics and IT	Beginning of 1970s
Fourth Industrial Revolution	cyber-physical systems	Present days

Source: *Spath, 2013*

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These revolutions impacted transportation and communication, triggered mass migration from the rural to the urban centres, brought banks and financial institutions to prominence, dramatically accelerated industrialisation, creation of labour unions, attendant pollution, violence, labour dissatisfaction amidst so many other things and is today changing the way we relate, work, do things and live generally.

SECTION ONE

The Fourth Industrial Revolution and Future of Work

The 4th Industrial Revolution (4IR) was first announced in 2011 in Germany. It denotes the era when the production of industrial goods is automated. It guides the concept of a smart plant featuring an absolute network of the production processes: actual time control using information technology and the amplified usage of artificial intelligence, humanoids and robots that control themselves; for better productivity and effectiveness (Kotynkova, 2017). The 4IR concept is fundamentally shaping digital conversations globally and debates posing more questions rather than offering answers are on-going. This chapter seeks to explore the implications of the 4IR for the future of work. In the case that the forecasts that automating production processes would result in the loss of millions of jobs are right, what would become of those whose jobs are extinct? What would happen to traditional workplace relationships? Although revolutions could seem magnificent, they also can be damaging, causing professional obsolesce.

The concept is based on the digitisation, cybernation and information exchange in manufacturing processes. The functionality of the 4IR is grounded on the use of IoTs, Big Data and Services for the creation of a "smart factory". Inside the interlinked smart factories, *cyber-physical systems* (CPS) scrutinise physical procedures, produce a cybernetic copy of the real world and reach decentralised decisions (Ghobakhloo, 2019). CPS interconnect and collaborate with one another and with mankind in real time through the IoT. Value chain participants access offered services through the Internet of Service (iOS) (Lu, 2017; Verdouw, Wolfert, Beulens, & Rialland, 2016).

Many policymakers are clueless about what the 4IR is about because there is a notable paucity of data available to answer fundamental questions, for example: what is the extent and level of change of the main technologies, particularly artificial intelligence (AI)? Which technologies are currently eradicating, supplementing or transforming which types of careers? What novel job opportunities are developing, and which policy alternatives could generate jobs in this context? This scarcity of information will result in missed prospects and the worst-case scenario could be terrible. Hence, if the unpredictable outcomes of the 4IR and its automation agenda would be understood, there is an urgent need for observation and tracking of its changes and indicators, preparation, reinvention and guidance of the workforce and workplace in readiness to guide the effects (The National Academies of Sciences, Engineering, and Medicine, 2017).

The discussion on 4IR so far is along two divides, namely; pessimism and optimism. Pessimists argue that the transformation leading to the use of IoTs, AIs, and robots among many others, will result in the end of human labour, while the optimists who are mainly economists, claim that since past technological advancements ultimately increased the demand for labour and earnings, the 4IR will not be different, hence, there should be no room for fear and anxiety. Between the two divides, few or not much individuals, scholars, or practitioners are discussing about employee health in the 4IR

Scholars and industry experts are regularly engaging in discussions on the emerging organisations and ways of guiding the whole value chain which is progressively syncing with customer demands. The value

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chain encompasses the overall product lifecycle, beginning with the conception of its idea through the development and production processes unto delivery to the customer and possibly, the recycling phase of the product (Stark, 2015). According to Brynjolfsson (2014), increasing automation brings humanity to the "second machine age". However, in the 4IR, data forms the heartbeat (material) operations and processes. Little surprise that the entire universe of work is jittery about the implications of the 4IR on work, future of work, relationships, leadership, strategies and employee well-being among many others.

The results and consequences of the consistent daily activities of transformational changes in the 4IR on the workers and workplaces are difficult to accurately predict or addressed in the short run. For instance, the use of robots and humanoids to perform routinised functions that are otherwise performed by humans will not only cause individual employees to lose their jobs but will also entail that they either upskill to acquire further skill in doing similar jobs or reskill to function in another job area. This will come with its attendant stress on the individual's health and/or his interpersonal relationship at work/ domestic relationships. On the workplace itself, the requisite actions requiring instant policy responses could be challenging, especially where such actions are necessary but demand short-term and precise attention.

What is the future of work in the era of automation? To meaningfully explore the future of work, there is a need to draw have a baseline knowledge by examining the present-day outlook of work. What is the present situation of the world's over three billion labour force? In what areas do we have the most prominent shortages in decent work?

According to the report of the Director-General, International Labour Conference, the 104th Session (2015), the world was enjoying a period of unprecedented prosperity before the global financial glitches of 2008, and the current level of economic development has remained notably lower than the times before since then. Unemployment rate worldwide is recorded at above 200 million, about 30 million in excess of 2008's number. The number of unemployed youths is much more in comparison to that of the total population, and in most cases the rate is doubly higher. Additionally, the inequality in the number of men and women in employment persist by 26% with more men than women, but the participation of women in workforce rose sharply in the last century. However, the latest information show that the salary gap between the genders is still above 20%, showing no sign of reduction soon. Rather, informal types of work and unsalaried domestic work at home are the typical jobs that women are the most participants in.

It is no longer news that the world needs to create approximately 600 million jobs by year 2030 since over 40 million individuals are launched into the labour market annually. The most visible job created these days are in the services sector that already employs about 49 percent of the total employment when compared to agricultural and industrial sectors' 29 and 22 percent respectively. Demographic structure of the present day workforce shows that most of the people at work are young people who will need provide for a rising number of aged people, as the global population shows an increase in the percentage of individuals above the age of 65 from 8 percent to almost 14 percent by the year 2040. According to the ILO (2013) report, inequities are on the rise in numerous nations as the contribution of labour to gross domestic product fell notably from 75 percent in '70's to 65% in the middle of the 2000s in industrialised nations.

With foregoing in mind, one is pressed to ask about the implications of a transformation of the production processes on a workforce that is under the burden of rising unemployment rate, inequalities at work, aging population with the need to be supported, escalating poverty and social injustice? In trying to address the incongruity among the necessary skills needed for the new machineries (including robotics, IoTs, Humanoids, and others), and the extreme rate of automation, will the workforce and workplace

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relations be able to fit? What will the impact of all these be on employee well-being as they struggle to adapt, upskill, reskill and lead in an unpredictable work environment? Is there sustainable protection, strategies, initiatives to support employees who may lose their jobs (deskill) or need to acquire additional skill (upskill) or learn new skills altogether?

There is no concrete answer to this question in the present. However, unclear and different guesses abound with majority of the scenarios spinning around the complicated associations among humans and machines (Proctor & Van Zandt, 2018; Roblek, Meško, & Krapež, 2016). Using robots to perform jobs erstwhile done by humans will have a displacing effect on labour and the demand for human labour will decrease; conversely, the cost of labour (wages) will decrease too. However, the cost savings derived from decrease in labour and wages will counter these effects through its effect on productivity and result in in an increase in the demand for labour in the tasks not carried out by robots. Additionally, the productivity effect will lead to more capital accumulation and deeper automation and conversely rise in the demand for labour (Acemoglu & Restrepo, 2018).

Although there are benefits associated with the automation of manufacturing processes in the 4IR as seen above, the prediction of its effect on employee wellness has not been made. From the period of transiting from area of traditional skill (de-skilling) to learn a new skill or acquire additional skill (up-skilling), the influence on employee health and wellness through strain, stress and fatigue could be imagined.

SECTION TWO

Digital Technologies and Employee Well-Being

Organisations in the 4IR seek to exploit new and developing technologies to attain higher stages of competence of production and consumption, grow into new markets, and contest globally with new products for customer base that progressively includes digital natives. Nevertheless, management and leadership of organisations in every sector will be required to design holistic human resource strategy to address the challenges of the transformation of the 4IR age.

Although innovative disruptions are essential to organisational development; however, there is a dearth of empirical studies that have systematically investigated the effects of the phenomenon on employees mental and physiological wellbeing. According to Mitchell and Brynjolfsson, (2017) immense difficulties for jobs accompany technological advancements. They report that although the level of productivity in the United States is at an all-time high, earnings of those at the 50% bottom level wage mark has been at a standstill since 1999. This, they say is as a result of technological advancement and the allocation of profits to those at the top of organisational hierarchies.

The National Academies of Sciences, Engineering, and Medicine (NASEM) (2017) marshalled the effects of information technology on employees. It reports that in the next 10–20 years, digitisation will impact almost every career. The introduction of self-driving automobiles for instance, will reduce the jobs of taxi drivers and long-haul truckers, while online training could be of immense value-add as a retraining option to retrenched employees. However, most of the information required to identify, understand and adjust to employee challenges are not collected systematically, or may not be in existence. Ironically, we live in an age of abundant information, but policymakers often do not always have timeously relevant information necessary to tackle the effect of digitization on the workforce.

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Organisations that would positively embrace the 4IR in a socially supportable manner, will need to complement their digitization process with training and development line-ups for their employees, in new equipment and technologies that skilled worker uses and by which the operatives are straight-forwardly and indirectly affected. Additionally, new working settings such as the '*cyber-physical factory'* will unswervingly impact the operatives and the nature of work, making new exchanges not only among humans and machineries, but also among digital and material ecospheres. Hence, socio-technical transformation towards the 4IR that integrates innovative strategy and manufacturing philosophies for two prong 'human-centric' and 'cyber- physical' production processes where robotics, artificial intelligence (AI), humanoids, and other innovative manufacturing technologies present possibilities to further enhance and augment human employee's physiological, psychological and cognitive capabilities instead of unmanned, automated factories (Romero, Bernus, Noran, Stahre, & Fast-Berglund, 2016) are required. Romero et al (2016a) suggest that approaching the 4IR this new way will need basic rethinking of job-design such as those utilised in the design of environments where aeroplane pilots, manufacturing operatives and military personnel work. Naturally, this setting would need the supervision and control of situations by humans.

According to the World Economic Forum (WEF) (2018) report, there are signs of rising skills instability resulting from the upsurge in new technologies and disruptive business models, alterations of work outlook arising from job sharing between machine and humans. Furthermore, it reports that employers of labour expect that the requisite skills for the performance of some work tasks will change considerably by year 2022.

Additionally, it is reported that at least 54% of the workforce will need notable re-skilling (obtaining new skills) and upskilling (obtaining additional skills). The skilling programmes needed to attain re-and upskilling are expected to last from six to twelve months or more. The skills that would be highly prominent by 2022 are forecasted as those requiring critical thinking, creativity and innovation, and dynamic learning and learning tactics. Others are thoughtful consideration of details, hardiness, ability to solve complicated problems and flexibility. There will also be incredible demand for leadership, interpersonal skills, emotional intelligence, and networking capabilities (social influence) (WEF, 2018). Hence, when an organisation automates its production processes, the human workforce are likely to face challenges resulting from the need to re-and upskill to perform their jobs, and this will place a demand on their time, energy and mental and physical wellbeing.

In line with Day, Scott, and Kevin Kelloway, (2010), automation is viewed here as both a demand and a resource using the *job demands-resources* model (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001) and Lazarus and Folkman's (1984) transactional model of stress to provide a theoretical framework. Aspects of digitization will be reviewed as promoters or reducers of workers' stress and wellness respectively. The degree to which digitization improves employee productivity, the extent to which it increases an individual's job control and self-development and the extent to which it requires that an employee de-skill, up-skill, or re-skill, all have significant impact on the employee's wellbeing. In this context, this section explores the interface among the employee (individual characteristics) and the institutional/work characteristics in the 4IR.

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SOME PREDICTED IMPACTS OF DIGITAL TECHNOLOGY ON THE WORKFORCE OVER TIME

As the rate of technological advancement continues to rise, so does the impact of the transformations that come with it. Evidently, the cost of digital technologies conversely reduces as they develop in capacity. If these transformations are well managed, they could result in a new era of decent work, decent jobs and enhanced quality of life for everyone, but if on the other hand, they are managed poorly, they will create the risk of broadening skills gaps, more inequity and wider polarization. The likelihood of more of these technologies being acquired by organisations to perform diverse functions is high. These advancements have enabled global development of peer-to-peer (P2P) platforms like Uber, CurrencyFair, Kiva, and Gobi, which cut off the exploiting middlemen and has the potential to basically alter employment designs and arrangements to a 'gig economy' where temporary job-based employment is rampant (Horton, Cameron, Devaraj, Hanson, & Hajkowicz, 2018).

The implications of these on employees across various sectors are enormous. Workforces are contending with numerous major changes for example, prolonged use of digital technology at work and home leading to longer screen-time, end of traditional work arrangements and relationships, fear of job loss, stress arising from new learnings, and boundary blurring between work and family domains. Given the unfolding changes, the main question for employers, management, and human resources practitioners should be the extent to which the present legislation, organisational policies and systems are able to address future workplace and workforce challenges. There is a need to start thinking about plausible futures before they come to pass and plan and strategize wisely.

Some of the trends and effect of digital technology on employees are as follows;

1. **The Spread of Automated Systems and Robotics:** The probability of the costs of advanced automated technologies falling is high while their capacities and broad use will possibly be on the rise. The implication of this is that more jobs will be created and/or lost and the need to re-, up- and de-skill will respond consecutively. To de-skill, will task the psychological, social and economical factors in an employee's life. The employee in this situation will need relevant information and time to process the situation and where this is not properly handled, stress leading to ill-heath could set in.
2. **Rising Issue of Workplace Stress and Mental Health Issues**: Workforce globally is recording increasing levels of stress and mental health issues. There is a possibility of workplace stress and mental health issues to be exacerbated by new and increasing use of digital technologies in the workplaces even though technology itself could also provide prospects of addressing these issues. For instance, Shigemi, Mino, Tsuda, Babazono, and Aoyama, (1997) found that male workers who could not keep up with the rate of technological advancement and those working in automated factories faced the danger of having of mental ill-health. Potential relations were found between high use of digital technology and signs of informed mental health issues among young adult tertiary institution students, although the causal paths were unclear (Thomée, Dellve, Härenstam, & Hagberg, 2010).

Mental health difficulties include anxiety, depression, and sleeping disorders and mood-swings. These have increased among the overall global population over the past few decades, but it is more prevalent among adolescents and young adults (Patel, Flisher, Hetrick, McGorry, 2007). Though the causes of

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mental ill-health are linked to many factors, use of digital technology has been figured as a main variable in the exposure of young people to the disorder (Thomée et al., 2010).

3. **Growing Screen Time, Inactive Behaviour and Chronic Illness:** Technological advancement and performing routine tasks on computers have increased the level of sedentary behaviours leading to physiological ill-health among both the old and young. Diseases resulting from longer time spent on the screen are on the rise and they include obesity, heart-related diseases (hypertension and heart attack), type 2 diabetes and other chronic ailments.
4. **Distorted Boundary Between Work and Family:** A large population of the global workforce, especially those from developed countries like America, United Kingdom and Australia are engaging with employment arrangements that grant them flexibility at work. Flexible work policies allow employees to work from any location outside the traditional workplace. Blurring of work-family boundary has been indicated as a predictor of work-family conflict (WFC) (Schieman, & Glavin, 2016; Allen, Johnson, Kiburz, & Shockley, 2013). Work-family conflict is a stressor that has been proven to associate significantly with wellbeing ((Kalliath, Kalliath, & Chan, 2017; Nohe, Meier, Sonntag, & Michel, 2015)

SECTION THREE

Future of Work - Deskilling, Reskilling and Upskilling

Introduction

This section examines the unclear impact of technological digitisation and automation of work processes on the cultivation of new skills by the workforce and the future of work in various sectors. Since the 20th century advancement in technology and machine automation which it brought with it, a reduction in the economic value of applied knowledge and skillsets previously acquired by machine operators, artisans, and various highly skilled workers (Braverman, 1974), while also compelling the acquisition of new skills in various engineering and professional careers. Advancement in technology has also been documented as potentially responsible for complicated patterns of d*eskilling*, *reskilling*, and *upskilling*. In this section, the scholars in line with the theoretical contraption of sociological discussions over economic deskilling, highlight a dissimilar potential for technological deskilling/upskilling/reskilling, namely the ability of technological advancement and the automation of the workplace of the future to contribute to the *wellness deskilling* of human workforce, a possibility that exists together with rich but presently underrealized potentials for wellness reskilling and/or upskilling. We explore this general premise by reviewing the extant literature involving automated workplaces, new media practices, and robotics. In conclusion, we posit that since employee wellbeing is a vital requirement for employee optimal productivity and satisfaction, and since technological advancement and uncertainty about the future of work may not be currently synchronised to achieve this in the future, there is a need to pay close attention—and perhaps formulate active intervention.

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The Future of Work Across Some Sectors

The future of work is not singular. It will vary along sector and industrial axis and impacted by initial situations surrounding the distribution of roles, various financial outlay for adopting new technology, access to skills and the adaptability of the employees. In this context, dissimilar experiences will accompany the structure of new functions and the characteristics of the functions that will no longer be in high demand. WEF (2018) reports that within the period 2018-2022, development in internet as accessed by smartphones and other mobile gadgets will possibly influence the Financial Services and Investment Sector, Aviation, Consumer Commerce, and Travel and Tourism sector. Consumer speedy adoption of recent technologies and the developments in cloud computing will propel fast growth in the ICT sector, while big data availability will widely influence the Financial Services and Investors, Energy Use and Technological sectors respectively. Also, the range of need and type of sector will push the adoption of specific technologies. As reported in WEF (2018), businesses in every sector will possibly implement the use of immobile robots, as opposed to humanoid, floating or subaquatic robots. But, leading organisations in the Oil and Gas sector relatively demand similar level of immobile, floating and subaquatic robots, the Financial Services and Investment sector will most likely adopt humanoid AIs. Spreadsheet technologies will significantly influence the Financial Services sector and the Global Health and Healthcare sector, with the earlier looking very likely to be an early leader in the adoption of the technology. Risk prediction could be easily done by machine learning, thus making it a major disrupter in risk prediction and positioning this technology as an attractive tool to the banking and insurance subsectors, and consumer sector. Machine learning could lead to predictive maintenance and demand modelling in the consumer sector.

Furthermore, many industries will face disruption and changing demand structures from non-technological issues, like the consequences of ageing in the Global Health & Healthcare sector. Competences in healthcare technologies could therefore become essential innovations to address the demographic changes occurring, releasing the time usually spent in management and administrative duties for caregiving occupations (Bughin et al., 2018).

Skills gaps between the local job market are among the vastly given hinderances to suitable technology adoption for some sectors., especially among corporate leaders in the Aviation Travel & Tourism, ICT, Financial Services and Investment, and Mining and Metals sectors. Global Health & Healthcare as well as Infrastructural businesses often quote leadership skills gaps as their most notable barriers, while the Chemical, Advanced Materials and Biotechnology, and ICT sectors report extensive worldwide labour market skills deficiencies. Every sector expects substantial skills gap and reskilling of some duration. In the fore front of this is the *Aviation, Travel* and *Tourism*; *Financial Services and Investors; Chemistry, Advanced Materials and Biotechnology; and Global Health and Healthcare* industries will require some reskilling. Organisations in these sectors propose that their employees will need reskilling for periods lasting for at least one year. Most organisations believe that they will equally increase and reduce some portion of their present staff, with the increase possibly counterbalancing the reduction (WEF, 2018). However, this position seems dissimilar across diverse sectors. Mining and Metals, Consumer, and ICT industries, assume that the reduction in their workforce will rise automation, while Professional Services sector employers assume that the ongoing changes will probably lead to an increase in the number of their employees.

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Deskilling

The developing technologies deeply reshaped workplace and human practices around the world; the economic, socio-cultural, environmental, political and physiological consequences of which the workforce still struggles to comprehend. Scholars and practitioners in the area of psychology, sociology, philosophy, and economics, in a bid to understand the emerging changes, conceptualised the term "deskilling" to describe the way in which the 20th century technological advancement resulted in the reduction of the value placed on hands-on knowledge and skillsets traditionally required of machine operators, technicians, and professional employees (Braverman, 1974).

Based on a Marxist consideration of skilled labour as a tool for reducing costs and improving performance and managerial hegemony (Marx, 1990), Braverman's seminal deskilling theory has been criticised considerably (Friedman, 1978). Nevertheless, technological advancement continues to generate fresh causes for worry about deskilling as the value for the core aspects of skillsets of lawyers, teachers, doctors, nurses, pharmacists, machinists, and even librarians are reduced to redundancy status (Roberts, 2010; Davis, 2008; Carey, 2007; Rinard, 1996).

The mental, socio-cultural, and economic effects of deskilling on the workforce, their dependants and communities could be overwhelming. Also, the effect on their mind and body could be arduous on their wellbeing. Still, industrial deskilling is a very disputed and severely *unclear* phenomenon (Spencer, 2000; Wood, 1987), when considering the freedom that the computer transformation offered employees charged with monotonous duties like filing, copying, and collating chances of reskilling and/or upskilling to gain employment in careers in the services and information sectors erstwhile assumed to be the prerogative of skilled and knowledgeable individuals (OECD, 2001; Gallie, 1991; Addler, 1990)

The 4IR faces its peculiar challenges with respect to technological deskilling; just like the previous (1st, 2nd, and 3rd) industrial revolutions. Developments in neurotechnology, biotechnology, nanotechnology, artificial intelligence and robotics are exerting new pressures on established professions and the skillsets that are linked with them. For example, the duties of human surgeons are likely to be further changed by their robotic counterparts. The question is, how will this impact the skills of human surgeons – make them redundant or free them to acquire new and advanced capabilities to give better care to patients? Also, will the advancement in software algorithms lead to the redundancy of skilled humans in the areas of forecasting, actuarial science, and market trading? Or will it simultaneously assist humans to both predict and better comprehend upcoming events as well as their intricate causes? Teaching is also at risk as a result of the efforts to develop automated methods for delivering instructional content, marking essays, and regulating dialogues in the classroom. If robots or humanoids are created to perform these duties, what would be the future role of a human teacher in a classroom? Will teaching become an extra role consigned to supporting robots and AIs; or would they be afforded additional time to inspire and create curricula, or give more care to the mental, growth and emotional needs of individual learners? Scholars in relevant fields are doing their best to trace and ponder on these issues and the vague potentials they create (Heisig, 2009; Ritzer, 2008).

However, this section focuses on an important facet of deskilling that has yet to be voiced in extant literature of the physiological impacts of technological advancement in the 4IR, namely, the potential in various professional and technological contexts for an automation driven deskilling to impact employees positively and/or negatively. It is negative where the human being is extracted from the workforce and not allowed to upskill or reskill and positive where the reverse is the case.

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Hypothetically, the potential for deskilling in an era of massive automation is significant, and irrespective of the optimism surrounding this, deskilling is likely to present serious wellness problems in many areas of human living if the present trends persist. Where technological tools completely replace the human beings in the performance of traditional functions that humans used to do, the human employee could be said to have been deskilled. This act is costly in financial terms expressed by loss of earning expectations, cost of reskilling (where the organisation does not bear it); time and energy expended in acquiring new skills, and physiologically, stress and strain on the body.

Summarily, the idea of deskilling has declined in scholarly circles, for some reasons. Primarily, the communication (ICT) revolution has created a problem to efforts to find the simple causal connection among mechanisation of human tasks and the loss or devaluation of human skill. Advanced technology especially computerisation have liberated most employees from comparatively low-skilled employment (OECD, 2001). In this way, upskilling and reskilling address the ambiguity in deskilling by additionally developing human skills needed for the future workplace. The secondary reason for the decline in the use of deskilling by academics is its strong association with past debates about employment, commerce, and socio-economic justice, connoting the concept as politically and ethically biased. Because of this, present day sociologists shy away from using the concept, not willing to stain their work with extreme or normative nuances; deskilling therefore lost some acceptance as an unbiassed tool of scientific analysis.

In conclusion, since reskilling is required for effective performance and earning of wages, and the various costs of deskilling on an employee's finances, time, energy and health may not be in sync with the future shape of technological developments, a concerted effort by practitioners and scholars to systematically appraise these developments and possibly design active and plausible interventions in support of deskilled employees is called for.

Reskilling

There are complicated response rings among new technology, careers and skills. Technological advancement can push growth in businesses, drive job creation and increase demand for expert skills yet depose entire functions when some duties become outdated or automated. Skills gaps—between employees and amongst the management of organizations—could both hasten the trends towards automation in some cases and create hinderances to the adoption of new technologies thereby hampering business growth (WEF, 2018).

The vital reskilling of employees will displace some staff and simultaneously make available for some others, new opportunities. But exploiting the gains and diminishing the losses demands the thoughtfulness of not only the policymakers (organisational leadership), but also the rational reactions from organisations to discover the winning strategies for employees and organisational bottom line.

Employees need to develop a mindset that is alert to learning in their shifting from their traditional roles that were limited to the emerging, erstwhile unthinkable future. Lastly, organisational leadership, government and the academia need to collaborate to find ways of assisting disengaged employees to refocus their skill or reskill to acquire new capabilities, and finance sizable investment in the creation of new learners who are alert in future human resources by addressing enhancements to learning and training structures, modernising employment policies to align to the actualities of the 4IR. Extant literature presents the different effects of technological advancements leading to the automation of work processes, showcasing how jobs are designed and employees ownership (or absence thereof) of skills harmonise

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with recently launched technologies to influence the organisational and individual performance (Autor, David, Frank Levy & Richard Murnane, 2000).

Reskilling will avail employees with highly in-demand skills capable of being improved upon, the opportunity to earn more and work in more excellent jobs. On the other hand, employees who do not possess the requisite skills to adjust to new technologies and be promoted to more value adding roles could have their salaries and work quality repressed by technology consistently devaluing their work, as it intrudes into their roles (WEF, 2018). These categories of employees need to be augmented to be motivated, alert and armed with compact skills to exploit new opportunities in the future via constant reskilling and upskilling (Shook, & Knickrehm, 2017).

The WEF (2018) identified a major downward trend in the demand for physical skills and manual capabilities as well as a decline in the need for skills associated with managing financial resources and fundamental *installation* and *maintenance skills*. Conversely, logical thinking, creativity and innovation, dynamic learning and training strategies, technology design and programming are gaining rising prominence. Competency in emerging technologies is one side of the skills coin, while person-related skills such as social influence, hardiness, ability to solve complicated problems, and flexibility, mindfulness and attention to specifics will remain or grow in value. Leadership, networking and emotional intelligence (EI), and service inclination is experiencing enormous rise in demand compared to their present importance. Hence, organisations will have to follow various corporate strategies to remain competitive in the face of fast changing human resource skills needs. To achieve this, top management and human resource practitioners will need to transform their skills in order to successfully be in the fore front of the workplace revolution.

It is important that organisations having employees confronted with unstable skills consider the need for reskilling and upskilling, their cost on bottom line and the opportunities that could be harnessed through this approach. The time required, costs to organisation and individuals, delivery mode and success/failure cases may not be the same for categories of employee, and job functions of various organisations undertaking reskilling and upskilling. For instance, some organisations may experience awesome increase in their employee performance, retaining of talented experts, empowerment of frontline employees to maximise the use of recent technologies in performing their duties and improved worker satisfaction through reskilling and upskilling programmes.

Notably smaller sizes of businesses could see reskilling as a way of reducing hiring costs, posting workers in disrupted work functions or as a means of increasing the skills source of their middle- and lower-skilled staff. Summarily, employers have perceived reskilling as a slim approach targeted at specific subcategories of workers, not as an all-inclusive approach to propel staff transformation. Lastly, while it is incumbent on businesses to be in the fore front of creating capability within their organizations necessary to sustain their conversion to the workforce of the future, the challenges arising from the financial and societal nature of these disruptions demand that they progressively become strategic in partnering with other stakeholders to organise the massive reskilling and upskilling needs of the future. Viable partnership opportunities exist in creating alliances with academics to reform learning curricula, collaboration within and among industry players on developing skill pipelines, partnering with organised labour to stimulate cross-industry skill movement. Governmental partnership could be harnessed through the creation of incentives for lifelong education, guaranteeing of standards sharing for reskilling and consolidation of protection (security) for mobile employees (Bughin, Hazan, Lund, Dahlström, Wiesinger, & Subramaniam, 2018). Nevertheless, there is still need for additional guide and good training opportunities.

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In order to avoid a situation of overwhelming and undesirable loss occasioned by technological advancement attended by skills shortage, mass job loss and escalating inequality; it is vital that organisations participate actively in assisting their current employees through reskilling, that employees personally take a pragmatically practical route towards their lifelong education, while governments quickly and innovatively provide supportive environment to help all these endeavours.

Reskilling though generally necessary, should be prioritised among employees presently executing high-value functions in order to strengthen organisation's strategic capabilities. Additionally, employees performing major and frontline duties who will be utilising new technologies in their work should be reskilled. Also, highly productive employees, employees performing duties that are mostly going to be affected by new technologies and are at risk of losing their jobs should be prioritised for reskilling.

WEF (2018) suggest that there is a need to comprehensively augment employee potentials in the face of transformation by using automation of certain roles to balance and boost human employees' relative strengths in order to empower them to exploit their full potentials on the long run. Instead of the narrow focus on cost savings through cutting labour cost, the augmentation tactic considers the bigger picture of value-creating events that could be undertaken by human employees usually in harmony to AIs, robotics and possibly humanoids, when they utilise the freedom created for them from performing routinised and monotonous duties for human-centric activities. To derive these benefits, employees need to acquire the relevant skills to enable them to succeed in the future workplace as well as the capability to reskill for as long as they are in the workforce.

The key business imperatives of vibrant organisations are to design in-house permanent training system, finance human resource development and collaborate with all stakeholders in crafting human resource essential to organisation's medium to long term development and contribute meaningfully to humanity and social stability.

Upskilling

The level of skill needed to perform work is becoming higher among industries and within distinct professions. Upskilling, both in relations to the average level of employees' education and the kinds of work that they do is required. Gallie (1991) reports that work with developed technology had connections with higher skill levels when examined with the experience employees had with changes needed in the skill to perform their jobs. Additionally, the skill changes are in the area of those needed to perform the job, instead of changes in the expertise and experience that individuals brought to the same job.

The rapid advancement in technology, among other factors including globalisation and emergence of knowledge economy has brought wide ranging argument about the need for advanced levels of skills. Although there is a growing consensus about the importance of skills as vital to economic development (OECD, 2000a) and the extension of the knowledge economy, there is a far less concensus on which capabilities and skills make the difference. Inside and outside the academia, discussions centre on the attainment of higher academic qualification in general, concentrated on the attainment of broad-based capabilities supportive of lifelong learning. From the job market opinions, a heightened attention is being given to skills such as the capacity to use *information* and *communication technology* (ICT) to address challenges, participate in teamwork, oversee and lead, and engage in continuous learning. Presently, workplace skills in the public discourse is differentiated from the regular or traditional courses given and received in schools and universities.

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In the foundation of the perception that knowledge and information are the core of advancement and progress is the idea of "knowledge economy" and "knowledge worker". Hence the capability to effectively create and use information in the digital era has become the important source of skills for potential employees (OECD, 2000b). Change and advancement push the growth of the knowledge-based economy as a result of their impacts on manufacturing processes, spending patterns, and economic structures. This implies that certain transformations in the processes of advancement may not have happened without ICTs and similarly, some of the effect of ICTs may not have been perceived outside the systemic transformations (OECD, 2000c). These transformations have impacted the establishments - economy interface, making networking, synergising and the liquid flow of knowledge in and around national borders to come to prominence.

Knowledge-based organisations comprising the superior-ranking technology product manufacturers, high-and-medium-high technology factories, and those service organisations that mainly use technology such as banks and other finance institutions, insurance companies, corporations, communication, social and individual services greatly contribute to national GDP and are developing speedily (OECD, 2000d).

Indicators of Upskilling

In order to adjust and sustain effectiveness while responding to rapidly changing consumer consumption patterns and preferences in an era of technological transformation, corporations require relevant systems, skilled employees, and competent management. With the changes is a need to restructure the workforce and modify the kind of labour needed. This has highlighted the increasing human capital levels shown by the academic accomplishment and as inferred from the rising demand for more vastly educated and expertly skilled employees. The sign that upskilling is going on is indicated by a preference of more educated people in the job market, evidenced by the proportion of people with university degrees in the workforce and the variations in the distribution of their share in the overall working-age population.

The accounting profession has experienced tremendous upskilling. Empirical data shows that in the past two decades, development in the expert, technical, managerial and executive professions known as "white-collar, high-skilled jobs" has risen higher than employment in other working groups. Comprehensive analyses of hiring trends within businesses corroborate a true upskilling process (Steedman, 1998; Berman, Bound, & Machin, 1997; Machin, Ryan, & Van Reenan, 1996). Those scholars propose that work-engagement moves within organisations, rather than between organisations, and represents an actual shift towards higher skills. This is a generalised reflection of the occurrence of upskilling procedure in individual organisations in opposition to a mere shift from sectors typified by low skilled work to sectors typified by high skilled work. The evolution of 'white-collar', expert skilled jobs in the services and manufacturing sectors respectively showcases upskilling, rather than a mere rise in the activities of the service sector. Really, the decline in manufacturing activities in various countries has in fact raised the need for white collar, high skilled professionals in the manufacturing sector. From a different perspective, there seems to be upskilling within professions

In fact, although total manufacturing employment has decreased in most countries, it has increased for white-collar, high-skilled occupations within the sector. From another angle, there appears to be upskilling within occupations Green, Ashton, Burchell, Davies, & Felstead, 1997).

According to Osterman ((1995), jobs within careers now require higher skill levels in the United States' workplace than they did before especially in the technological and professional careers. In addition to upskilling of the workforce in the academic and professional qualification, new and clear need for set of

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"workplace competencies" and "interpersonal skills" commonly identified with the emergence of ICT and recent work practices (OECD, 2001). Some of these proficiencies and skills include, basic computing skills, problem solving, critical thinking, team-working and communication (Smith, 2016; Fong, Sidhu, & Fook, 2014; Green et al., 2000). Hence, upskilling and a rising demand for various proficiencies are the main characteristics of the future workplaces ingrained in knowledge economy.

RECOMMENDATIONS

This chapter recommends that lifelong strategy to proactively identify and prepare employees whose skills will not be relevant in the future workplace be urgently crafted and adopted by organisations in every sector. There is no way to downplay the psychological effect of deskilling on affected employees. But appropriate preparation and care in displacing them should palliate the physiological and mental employees suffering. Some of the strategies include post-career counselling, financial management counselling, stress and time management trainings and mindset reorientation.

Additionally, those to be reskilled and/or upskilled should be afforded relevant timing to acquire and test the new skills through patient guidance and support. Time should be given to assist employees in planning their self, family and work relationships while they undergo the required reskilling and/or upskilling processes.

Furthermore, as it has become glaringly clear that the advent of the 4IR came with the need for lifelong reskilling and upskilling in the future workplace, organisations need to become responsive to the need to fund these. The skilling needs are expected to be costly both to the organisation (in productivity terms) and the individual employee (in terms of money, energy and time). A new scheme where individual accounts are opened for employees could be funded by an obligatory three-tier contributions being made in small amounts regularly by individual employees, employers and the state. This is because, the skill needs of the future may not be met through public funding alone, because, when the national purse faces recession and funds are no longer spent on skills development, individuals and organisations may not be willing to invest their monies on it. Creating a scheme would afford all individual employees the opportunity to access fund to meet their reskilling and/or upskilling when necessary.

Employee health and wellness programmes usually adopted to address employee health and wellness issues in the classical workplace may not be efficient in addressing these issues in the workplace of the future. Emerging stressors and ailments such as disorders associated with addiction to social media platforms, stress from reskilling and upskilling and mental health, to mention a few, need novel interventions. Human resource strategists need to collaborate with the academia, organised private sector and policy regulators to tactically design initiatives/interventions to tackle emerging stressors and ailments.

GUIDE FOR FURTHER RESEARCH

The future of work, deskilling, reskilling and upskilling in the 4IR are topical issues widely discussed among experts, professionals and policy regulators in the present times. However, there is a need to research on the extent to which the future of work is impacted by the skill needs and the levels of stress generated among employees by the need to reskill and /or upskill. Additionally, scholars should explore

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the effect of these new skills modification needs and how they impact on employee wellbeing and design strategies to address the emerging health issues resulting from automation and new technologies.

Reskilling and upskilling are necessary in the workplace of the future but very costly undertakings. Empirical studies to determine the ways of reducing and /or subsidising the cost of these ventures in order to exploit the benefits that accrue from the process is recommended.

CONCLUSION

The 4IR comes with it bright prospects, changes to the way things are done, changes to the way relationships forged and sustained, changes to the way goods are produced and services rendered. It comes with vision of good things. Nevertheless, to tap into this positive vision, the workforce needs to possess the suitable skills that should empower them to both work and thrive in the future workplace. They need to be enabled to continue to reskill and upskill throughout their lives. Proactive organisations should be able to craft vibrant in-house lifelong knowledge system, invest in human capital development, and massively partner with other stakeholders on human resource strategy as an important business prerogative, vital to organisations' mid- to- long-term development, for meaningful and significant contribution to people and social cohesion. Employees need an alert attitude towards learning as they transit from the monotonous traditional work practices to emerging and awe=inspiring futures. Lastly, governments, top management of organisations and the academia need to basically find ways of assisting displaced employees to refocus their skills or reskill to acquire new ones; and to devote huge financial sums for the development of a new alert mindset for learning among the employees through undertakings to improve learning and training systems, revising workforce policies to align to the actual events of the 4IR.

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Chapter 2
The Dynamics of Workplace Relationships, Employee Well-Being, and the Fourth Industrial Revolution:
Perspectives of Workplace Relationships and Industry 4.0

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ABSTRACT

Employees globally are expected to flourish amidst the uncertainty, volatility, and complexities of the muddy waters of Industry 4.0. To identify changes in the perceived workplace relationships and consider initiatives that will improve interpersonal relationships at work in the 4IR. A review of literature will be conducted on the following key variables: 4IR. In the 4IR, provision of interpersonal other than digital means of communicating with employees, effectiveness in intra-organizational information sharing among employees, constant training on new and improved technological tools of working will be useful. Human resource practitioners should focus on designing strategies to improve IR at work, in order to minimize interpersonal conflicts, provide social support and improve organisational performance.

INTRODUCTION

Workplace relationship is the compound word for all interpersonal relationships in which employees engage themselves with in the process of doing their jobs including customer relationships, workplace friendships, supervisor-subordinate relationships, Professor-student relationships, client professional relationships, romantic relationships (Abe & Mason, 2016). Scholars have considered workplace relationships from different perspectives. For example, workplace relationship quality, (Sias, 2015); tradi-

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tional and emerging perspectives (Sias, 2008); Bullying in the workplace (Johnson, 2009); Millennial's organizational relationships and performance (Myers, & Sadaghiani, 2010); Innovative behaviour and workplace relationships (Xerri, 2013); Workplace culture (De-Lara, Ting-Ding, 2016). Each perspective is unique in concepts of organization, communication, and relationships, as they draw the attention of practitioners to various essentials in an organization situation (Sias 2008). The perspective that is relevant to this chapter is the communication aspects of workplace interaction in the era of industry 4.0. Bearing in mind that communication and relationships are like two sides of a coin.

Employee wellbeing is not a bad concept, but making the objective benefits of wellbeing a priority, and implementing its promotional policies in an organization is intense resource wise. Previous studies on employee wellbeing has been well documented. For example, employee wellbeing scholars wrote extensively on the circumplex model of affect (Russell, 1980); the components of employee wellbeing (Van-Horn, Taris, Scaufeli & Schreurs, 2004); Mental health, (Keyes, 2005), Subjective wellbeing at work (Warr, 2007); Core of wellbeing (Diener, Lucas & Oishi, 2005); affective employee wellbeing, (Bakker & Oerlemans, 2011); Positive and negative concepts of employee wellbeing (Makikangas, Kinnunen, Feldt & Schaufeli, 2016) and human sustainability and employee wellbeing, (Kobayashi, Eweje, Tappin, 2018).

The Chartered Institute of Personnel and Development (CIPD) defined employee wellbeing as, "Creating an environment to promote a state of contentment which allows an employee to flourish and achieve their full potential for the benefit of themselves and their organization." Employee wellbeing initiative at work is the balancing of the needs of the employee and that of the organization. The CIPD survey of 2018 suggested that the mental health awareness of workers has increased, and stress remain the dominant cause of employee ill health. "Although technology is viewed as a positive step forward, a whopping 87% of HR professionals reported that the most common negative effect is the inability of employees to switch off outside of work ". (Jimoh, 2016).

A new face of development has evolved in the fields of the digital technology, physical technology, and the biological technology. These three technological areas are the drivers of the Fourth industrial revolution. These technologies are impacting the global industrial, economic, and social development (Li, Hou &Wu, 2017).

Globally the labour markets are undergoing transformation as the consequence of globalisation, technological and demographic changes. The transformation is evident in the new forms of employment, different approach to workplace contracts and engagements, facilitated by online platforms which is because of the 4th industrial revolution (Brooks, 2016). Technology has accelerated the level of communication in workplace relationships. Employees are assessable through different forms of technological tools at any point in time. What effect does this have on the employee in a short and long run? Communication has widened the scope of interpersonal relationships among employees at work by the introduction of technology, scholars must search for new theories and concepts for workplace relationships. In this chapter, the initiative positioned to assist the wellbeing of employees in the face of the new industrial revolution is social support. The assessment of the growth in the characteristics of perceived support and the propensity of employee's behavioural interpretation as supportive. The assumption is that social support represents the positive interpersonal relationships among employees (Gibbs, 2017).

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Historical Background

Literature on interpersonal relationship have grown over the years. Earlier researchers viewed interpersonal relationships from the role of relations or intimacy (Marwell & Hage, 1970), Socio-emotional and informal relationships, (Wish, 1974). In 1976, the four dimensions of interpersonal relationship was documented (Wish, 1976). The dimensions include, one, perceived equality versus inequality in relationships (Forgas, 1992; Fiske, 1992): Two, Valence of the relationships between positive and negative relationships (Fiske, 1992): Three, the strength or interdependence of relationships, (Forgas, 1991): Four, to determine the fundamentality of the social context of relationship and/or whether relationship relates to work, Haslam & Fiske, 1992). Studies on interpersonal relationship graduated to determine the presence of relationship between leaders and members of an organization (Graen & Uhl-bien 1995). The interdependence in relationship was reasserted in terms of viewing the compatibility between cooperation and competition (Johnson & Johnson, 2011), Power distribution (equal versus unequal power), (Loi, Lam & Chan, 2012),;Task-oriented versus social-emotional relations (Rosh, Offermann, & Van Diest, 2012); Formal and informal intensity of activities in relationship (Chen & Krauskopt, 2013). The focus of these scholars was to establish the perceptions of interpersonal relationships and to determine the context in which relationship occurs.

The scholars that digressed from the earlier view are of the opinion that there are conditions that affect interpersonal relationships which should be considered also. These scholars asserted that individuals spend considerable time at work, and the interaction of employees in the workplace should be given due attention. The suggestion of Song and Olshfski, (2008) was that family ties, class, ethnic background, race, gender, age, experience, interests, and geography influence interactions among people. Many theories support the suggestion that employee's characteristics and condition of living affects the social relationship between individuals (Sacco & Schmitt, 2005). Social categorization Turner, 1982), social identity theories (Tajfel & Turner, 1986; Turner, 1982), they suggested that people should categorize themselves into in-groups and out-groups according to significant characteristics including sex and race. The assumption was that individuals tend to reduce their differences within groups and enlarge their differences between the group members.

From the foregoing, workplace relationships are all interpersonal relationships in which employees engage themselves with in the process of performing their jobs including customer relationships, workplace friendships, supervisor-subordinate relationships, client-professional relationships, romantic relationships. The following conditions have been proven to affect interpersonal relationships at work: One, loneliness which is a situation experienced by the individual where there is an unpleasant or inadmissible lack of (quality of) relationships (Peplau, 1982). Two, exclusion or social isolation is the state or process of being excluded, not allowed take part in a workplace interaction (Baumeister & Leary, 1995). When employees lack positive relationships, they usually experience loneliness, guilt, jealousy, depression, and anxiety (Leary, 1990). Three, organizational justice: which deals with employee's perception of fairness in the workplace. The concept is divided into three dimensions, namely distributive, procedural, and interactional justice. The distributive dimension is the just allocation of resources or rewards. The procedural dimension concerns how decisions are made, reasonably or otherwise. The interactional dimension is the relationship between superiors and employees, essentially, how employees are treated (Colquitt, Conlon, Wesson, Porter, and Yee, 2001). Four, relational justice is defined as "the justice produced through co-operative behaviour, agreement, negotiation, or dialogue among actors in a post conflict situation" (Casanovas & Poblet, 2008). Five, psychosocial working conditions is the psychosocial aspects of the

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working conditions which are mental load or psychological stress. These constitutes not only mental demands in quantitative ways, for example, production rates and time pressure, but also relationships to customers or demand persons (Kristensen, Bjorner, Christensen & Borg, 2004).

Six, individual differences which refers to the degree of variations and similarities among people on intelligence, personality, interest and aptitude or *intelligence quotient* (IQ). Physical factors such as body, age, and sex (Maltby, Day, & Macaskill, 2007). Seven, cultural differences are different individual orientations with social norms that are prevailing which are probably linked with cultural differences in the way people relate to and communicate with one another in interpersonal relationships (Fiske,1998).

Workplace relationship metamorphosized into Leader-Member Exchange (LMX), (Dansereau, Graen &Haga, 1975; Graen &Uhl-Bien, 1995). The theory contended that leaders develop different relationships with their subordinates. The supervisor-subordinate relationship was developed on the premise that the supervisor directs and determines the flow of relationship from introduction to maturity (Sias, 2008). In 2014, a followership theory was developed that highlighted the role of subordinates as important factors in workplace relationships. The theory emphasised two frameworks, one was the role-based approach where subordinates are viewed as moderators of leaders and two, constructionist approach where subordinates are co-creators of relationships (Abe, Mason 2016). All discuss thus far has awaken a salient question. In the phase of recent economic, social, and technological changes, will the workplace relationship still hold water, or should scholars begin to look towards new relationship for employees in the workplace, especially now that industry 4.0 is with us?

Workplace wellness started with the Italian Physician Bernardini Ramazzini (1633-1714). He was among the first writers on the influence of work exposure on employees (occupational diseases). He took interest in the possibilities of applying preventive measures to help improve employee well-being. Ten-hour workday was proposed by welsh in 1810, to protect the wellbeing of the workforces. An aggressive measure of eight hours was later proposed (Lamphier & Welch, 2017). The account of the health problems of industrial worker was first documented in 1832 by Charles Turner. At that same time, Thackrah highlighted that employers often neglect the wellbeing of their employees in the bid to run their organizations Thackrah, in1932 (Murray 1985). Organizations have been moderating employee wellbeing through constant trainings and improvements on working conditions. In 1950s the concept of Employee Assistance Programs (EAPs) was introduced. Organizations began to offer wellness interventions with primary focus on alcoholism and mental health problems (Owens 2006). It was later confirmed that true workplace wellness programs began to have positive effect in the mid-70s (Realdon, 1998). During this time, a shift was perceived in the financial responsibility for health care from government to employers of labour. After which the development of worksite wellness was motivated to consider occupational safety and worksite health of employees. The reasons given for the worksite wellness are as follows:

- A general culture shift that promoted fitness
- Emerging research findings that showed the cost of employees' unhealthy habits
- Newly formed workplace health promotion groups such as the Washington Business Group on Health and the Wellness Councils of America.

Over the last fifteen years workplace wellness programs adopted have moved from providing health information, counselling, and physical fitness to rewarding employees with monetary incentives (Wieczner, 2013). While employers are debating over the high cost of maintaining employee wellness, other organizations with foresight are looking ahead towards meeting the demand of human progress at work

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in the fourth industrial revolution. Therefore, the question here is, whether a safe, healthy, and productive work environment for humans is an aspiration or a pot of gold at the end of a rainbow that can never be reached? Organizations that have developed employee wellbeing tagged themselves as "the best place to work" will the same hold in the fourth industrial revolution, where almost everything is assuming a new learning?

The advent of the 4th industrial revolution suggested that there have been three major technological advancements. The First industrial revolution started in Great Britain with the introduction of hydraulic and steam machine system. The second was the separation of components and the assembly of products by the division of labour. The third was characterised by wide use of the electronic, automation of manufacturing and information technology. The fourth is the integration of intelligence and networking system (Li, Hou, & Wu, 2017), widespread application of cyber-physical systems in the manufacturing industry (Liu & Xu, 2017). The Cyber Physical Systems (CPSs) represents the understanding of the Fourth industrial revolution (Zander, & Mosterman,2017). The Industrial Internet, which was promoted by General Electric in the USA, is viewed with the same idea as CPSs. The common features of both are that they are enabling technologies which create the integration of the virtual and real (Al-Fuqaha, Guizani, Mohammadi, Aledhari & Ayyash, 2015). This is a network that permits intelligent objects to communicate with each other. The fourth industrial revolution is manifested in almost all aspects of the society, technology (Shwab, 2017), production (Webster, 2015), consumption and business (Gentner, 2016), human genetics (Sackey & Bester,& Adams, 2017).

The term industry 4.0 originated in 2011, at the Hannover Fair in Germany. The name was a strategy to mitigate the increase in competition from overseas and to differentiate European and German industries from other international markets (Wang,2016). The intention of the German Government was to use intelligent monitoring in production processes to support decision making and machine maintenance, thereby reducing costs and increasing competition of German industries. For a clearer understanding of the term industry 4.0, a framework was proposed that was adopted by different governments (Price Waterhouse Cooper, 2017).

The concept of industry 4.0 began in Germany and has been recognized by other leading industrial nations. In United State of America, it is called "connected enterprise" and referred to as the "Fourth Industrial Revolution in the United Kingdom. The expectation of those at the forefront of the industry 4.0 is that it will be more profound, irreversible, and more rapid in development and acceptance than all the other three generational moves.

The beauty of this chapter is captured from the lens that view industry 4.0 and employee wellbeing from the concept of social support. The changes that industry 4.0 drives in the workplace demand that employees be supported through the transformation. The believe is that employees can count on their employers to offer needed support. That employees will be assisted through period of crisis. That information will be made available to employees to cope with the changes in work operations and interactions.

Challenges of Employees

International Labour Organization's (ILO) forecast that 2.3 million workers globally will accede to a work-related disease or accident every year. 6000 deaths are predicted every day. In 2017, 1.3 million work-related illnesses were reported in United States alone. These illnesses are work-related stresses, mental health, and musculo-skeletal cases (HSE, 2018).

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Low rates of unemployment and unending demand for productive work has posed a serious challenge. The responsibilities of managing the wellbeing of employees in a multi-generational workforce where almost everything is changing at an unprecedented rate is imperative. Under reporting of interpersonal conflicts at work is not impossible among employees who are trying to find their feet in the technological workplace (Abe, 2015).

An empirical study carried out among 310 employees of four retail companies in South Africa, 2016 further buttress the facts above. 80% of the respondents agree that they have no relationship with their supervisors or co-worker because they work with machines most of the time. Low level of communication, disrespect, low (EAP) Training, low support, lack of friendship was responsible for low interpersonal relationships among employees (Abe, Mason, 2016). Audi motor company stated clearly that no matter how educated an employee is, the future of any employee in the company depends on their level of interpersonal relations at work. The question is, under the present circumstances where organizations have acceded to job cut, what will happen to employees with low interpersonal skills or relations?

Jeffrey Pfeffer, (2018) documented that the number of employees who say they have no close friends at work has increased in the last ten years (Methot, Lepine, Podsakoff, & Christian, 2016). Previous studies on social support about associations and connections in the workplace that an employee can count on during crises, have effect on that individual's psychosocial stresses. Employees with low social support have been linked with high mortality rates (Uchino, Cronan, Scott, Landvatter, & Papadakis, 2020). The difficulties of interpersonal relationships consequently social support have been the workplace characteristics. For example, encouraging unhealthy competition at work, ranking of employees are vices that has reduced collaboration and teamwork among employees. Unconsciously, the fourth industrial revolution and the use of technology has encouraged transactional workplace approaches, whereby employees are seen as tools, factors of production, emphasis are now on trading money for work; this has left many without any emotional attachment to people and workplaces. The assumption is that as easy as it is to hire you, it is easier to fire you. Again, what if the organizational outcome is better performance and productivity, what effect will all these have on the outcome for the organizations?

By the Fourth industrial revolution and emerging use of technologies, the focus of workplace relationship can no longer be on two people as traditionally dictated, but by many simultaneously. This is a complete departure from the status quo. At best relationship at work must assume a new form of learning because of its complexities.

Concept of Workplace Revolution

The concept describes the interactive changes in the engagement of employees globally and in different sectors. Organizations are rapidly evolving their workplace strategies because of the need to become disparate and respond timeously to rapid growth. These establishments are looking forward to innovation and technology as tools that drive competition and productivity. Global employee performance index must assume a new paradigm between value and culture; reduce employee dissatisfaction and disfunction; embrace exponential volume of change in the organization. The factors that underpin the workplace revolution are:

1. Opportunities that the new technology presents drive innovation and collaboration. Globalization and digitization are major challenges for many organizations who need to focus on finding new ways to create value and increase productivity.

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2. Generational change that creates expectations that are either high or unmet. It has been confirmed that five generations of groups interact simultaneously at work. The leadership of these different generations of employees need to find solutions to their long- and short-term challenges to maintain its position as the best place to work.
3. Creation of organizational agility. The need to be ready for any form of change whether economic, technological, or social, and the readiness must be swift and quick.

Trends in the Workplace

Five reasons have been purported to be the purpose behind industry 4.0 and why it is imperative to be revolutionary in the era of open market operations and information Technology. First, Industry 4.0 reduces the burden of challenges in the manufacturing industry that is in search of flexibility and responsiveness to business trends. The challenges include increase in market volatility, short product lifecycles, higher product complexity, and global supply chains. Second, industry 4.0 facilitates the transformation of modern economies to become more innovative and increase productivity. Modern Technologies like digital chains, smart systems and industrial internet should speed up innovations and business models are implemented at faster. Third, Consumers are regarded as co-producer, and this brings them to the centre of all activities. Product customization is valued as well as product value chain, digitization will ease crowdsourcing and it will result in faster design process. Fourth, Industry 4.0 puts human (worker/employee) in the centre of production. Workers will be assigned where assistance is needed, there will be high demand for skills in managing complex projects, flexible work arrangement will be available. Five, Sustainable prosperity using technology to find solutions to energy, resources, environment, social and economic challenges.

A body of evidence is growing on the connection between measures of happiness, wellbeing, engagement, and productivity among employees in the workplace. Emphasis are on the need to close in on the measures that will serve a universal purpose as the work environment changes (Shwab, 2017).

Scholars are calling for strategies to provide gook work for all, that is fair and decent with a realistic scope for growth and fulfilment. The shift from employer responsibility to government responsibility and accountability should be enhanced.

As progress is recorded technologically, clarification will be needed in several areas that relate to employees. The need to be clear about who a worker is? The need to inform all on new platforms, such as Uber, obligations and accountabilities between platforms and service deliveries to clients. Concerning the worker again, the law should be clear about his/her rights, what the minimum wage should be where the number of hours in engagement are not specified. Increased protection is necessary about the dependent contractor, their description and how organizations pledge to support them.

In addressing work control, job autonomy is required which is built on trust between the employer of labour and the employee at different level. There is the need to clarify what is expected from the employee. Trust between the employer and the employee is important, trust is also imperative between employees at different levels of the organization. It has been reported that the most likely reason why employees leave their work is failed relationship. Therefore, positive relationships across the cadres of employment should be emphasised, without which the organization may not survive despite the efficiency of technology (George, 2015).

In the technological age words that are familiar are assuming changes also. For example, the word relationship has changed to interface. The interpersonal relationships between humans are now being

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extended to machines. Therefore, machine to machine interface at different levels of process have been developed with the aim of performing human functions at work. Organizations that are at the fore front of change in automation and technology have engaged in the automation of links between different processes. For example, in the manufacturing industry, pre-machining and part measurement automation Has been developed. Exchange of information is faster through automation between planning systems, production machines and measuring instruments without human interference or control. Irrespective of the machines involved, consistent data formats and standardized interface has been achieved to ensure continuous networking throughout the processes. For example, OPC Unified Architecture. In accordance with industrial standards, fully integrated communication solutions are developed with feature robust operational friendly control solutions to implement higher levels of automation. Process steps, range of manufacturing, replication and metrological systems are all interconnected into a network and relates to the corresponding planning systems. Therefore, the scope of interaction of communication activities in the technological age is widened with minimal influence by humans (Shwab, 2017).

RECOMMENDATIONS

Having considered events that are unfolding some of which were anticipated and others incidental, it is important to view relational strategies that the workplace leaders need to put in place as organization evolves. It is obvious that the employees are at the receiving end of the hammer of the 4th industrial revolution, because of the constant threat on their jobs and workplace relationships built over the years which have consequent effect on their wellbeing. The line of recommendations will dough-tail on the factors that affect employee interpersonal relationships at work vis-a-vis the fourth industrial revolution. These factors are communications, teamwork, respect, training, friendliness, listening, sharing information and problem solving (Abe, Mason,2016). Focus here is on the positive contribution of workplace relationships as tools of transformation.

To improve employee workplace relationships in the face of technological changes of industrie 4.0, it was suggested that team accomplishment is imperative (Abe, 2015). However, Iwao Kobayashi, (2018) has documented the following strategies to assist organizations that are developing their teams at work. Practical program for corporate revolution, the quest to clean and organize workplace, rationalization of the system or management of objectives, improvement of team activities, accelerations of changes in technology, minimal supervision in manufacturing, building relationships and corporation between neighbouring processes and empowering workers to improve on their carriers.

Institution of best place to work strategy. This strategy is premised on the policies of long- term engagements and relationships with customers and employees. Organizations need to earn the trust of their employees as caring for their wellbeing. For example, the organization should be able to go the extra mile for employees who dies in active duty; by means of assistance to the relations of the deceased employee.

Organizations that are at the top of their economic and social activities have put in place a culture that is characterized by open communication, high performance, an engaged work environment. Forster the culture of caring both for employees and clients/customers through the following improvements: Learning culture which creates room for both old and new employees to attend classes to be acquainted with the culture of the organization. Employee inclusion is important through engaged interactions in the organization, looking at the goals, mission, and objectives set for achievement (Tian, Deng, Zhang & Salmador, 2018).

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Contributing to the assistance of employees through positive interpersonal relationship (social support). When employee needs another employee to count on out of crisis, the organization should fill in the gap for their employee's assistance. For example, the organization may request an employee to apply for financial assistance when such need arises. Commitment to employee's wellbeing can be strengthened when the organization demonstrates its investment in the health of the employees. For example, the health officer of an organization must ensure that employees can always access its health programs and facilities.

Organization should be viewed as assisting employees with contributions outside the payroll. For example, in the event of national or state disaster, a well-meaning organization can demonstrate social responsibility to its environment by contributing to relieve funds to help people suffering from disaster.

Employees are likely to help others with whom they perceived to share unit of relationship that make them similar and unique. The language that can create division among employees should be avoided as best as possible. Especially those languages that can cause noise between the leaders and employees and erode the idea of community and identity.

The need to strengthen common identity and social bond must be encouraged among employees. For example, the organization should encourage programs that celebrate employees' tenure, shared successes, throw end of the parties for employees. The sense of belonging should be promoted now than ever as against the sense of transaction promoted by the industrial revolution.

Heightened the personality coherence of employees through assessing the availability of assistance provided to employees by the organization, each of the components of assistance are generally referred to as sense of social support. Where it is the belief of employee that there are certain others that accept them for their personality, including their best and worst dispositions, such persons are energized when they observe that others are willing to support them. This is called sense of acceptance (Sarason, 2013). The sense of acceptance is also an aspect of coherent personality, that is, constellation that promotes effective coping with demands and challenges, and enhances the ability to receive social opportunities (Hayes, Levin, Plumb-Vilardaga & Villate, 2013).

FUTURE RESEARCH FOCUS

The traditional interpersonal relationships among employees was developed on the premise that it takes two to tangible people of different status to create, maintain and end relationships at work. Through widened communication, the scope of interpersonal relationships has broadened due to the assistance of technology and creation of networks from where interested persons relate and interact with others around the world that they have not seen before. Areas of research interest in the future are, exercise of choice in workplace relationships, exploring the power of reciprocation in relationships developed, maintaining networks and reliance on the information received from interactions with unknown persons.

Many functions of employees at work will be taken over by machines. Modern leadership at work now sees employees as resource tools just as machines. Furthermore, the role of interpersonal relationships has been extended to machines that converse one with another to solve complex problems through system programming. The question that comes to mind is, in the future workplace, who will lead who? Will the man lead the machine or machines will lead the man since they are both resource tools?

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CONCLUSION

The progressive knowledge of workplace relationships that was predictable through different theories in the past has assumed a new meaning because of the intervention of the 4IR that is accompanied with unprecedented changes. The tools of technology have affected the way employees interact and relate at work. The scope of interpersonal relationships has widened, what use to be private and confidential information may no longer be classified. The challenges of relating in the workplace takes different turn as changes takes place in the operations of organizations. However, a higher level of support is needed for many employees who may lose their jobs. The need to unlearn, learn, relearn is inevitable under the circumstances that employees find themselves. Some employees may probably be too old to cope with the changes in the workplace. Many employees confess they have lost confidence in their governments for job retention but trust their employers as the last resort.

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Chapter 3
Organizational Well-Being:
A New Theoretical Model and Recommendations for Future Research

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ABSTRACT

The aim of this paper is two aspects: to provide an overview of organizational wellbeing (OW) research; to present a new model of OW focusing on successful outcomes and its operationalization of the construct and the recommendations for future. A summary literature review of the OW literature, focusing on organizational well-being and its possible consequences. The literature is used to develop and propose a new model of OW and its success indicators. Testable relationships are proposed between these indicators. The research model has not been tested empirically. It is an external representation, is a new and untested concept in the OW literature. The paper provides a model that leaders, managers and newcomers may find useful to successfully establish the OW process. The model proposed is novel and raises the important issue of appropriate OW success indicators. New propositions are made regarding relationships between antecedents and output variables.

INTRODUCTION

Well-being plays an important role in a variety of ways. It impacts an employer's approach to traditional benefits and HR policies. But just as important, making employee well- being a priority will have a positive return on the organization's workforce availability and performance, labor-related costs, and output — including innovation, customer service, and quality of products and services. Research undertaken in various social science disciplines supports the adoption of well-being — in all its many dimensions — as a concrete, achievable employer goal. Creating a future-ready approach to employee well- being requires a vision of the end-state and a strategy. It should start with an analysis of the employer's expectations and needs and objectives to identify areas of greatest need and the corresponding effort required for success. Using an opportunity analysis enables an employer to prioritize and plan actions that will produce the

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best return on investment by using all parameters of wellbeing. To implement wellbeing in the workplace, employers must first understand the nature and process of well-being. First, an individual's experience at work obviously affects the person while she or he is in the workplace. In addition, these experiences also "spill over" into non-work domains. Workers almost spend one-third of their waking hours at work, they don't necessarily leave the job behind when they leave the work site. Indeed, the overlap between non-work and work leads to the observation that a person's work and personal lives are interrelated and intertwined. Second, there is a growing awareness that certain elements in the workplace pose risks for workers. Unsafe work practices, sexual harassment, disturbing supervisor-subordinate relationship, and uncontrolled aggression are such potential threats. Third, health problems adversely affect outcomes. Workers experiencing poor health may be less productive, make lower quality decisions, exhibit higher absenteeism and make consistently diminishing overall contributions to the organization. The need for regulating new business growth is usually prompted by social and psychological perception of the employees. We need to understand the key predictors and the process of well-being.

Now there is a greater awareness on the role of employee's wellbeing in the business organization. But there is less attention has been paid to its ramifications for employee wellbeing. Current research is now demonstrating the benefits of organizational wellbeing which is a strong criterion for business success.

The pursuit of wellbeing is an important goal for many organizations. Few scientific researches have focused on the question of how wellbeing can be increased and then sustained. In the pursuit of happiness, empirical evidence suggests that the ability to be happy and contented with life is a central criterion of adaptation and positive mental health. Lyubomirsky and her colleagues recently complied evidence showing that happiness has numerous positive byproducts that appear to benefit individuals, families, and communities (Lyubomirsky, King, & Diener, 2004; Fredrickson, 2001). Furthermore, Lyubomirsky et al.' analysis revealed that happy people gain tangible benefits in many different life domains from their positive state of mind, including larger social rewards (higher odds of marriage and lower odds of divorce, more friends, stronger social support, and richer social interaction; e.g., Harker & Keltner, 2001; Marks & Fleming, 1999; Okun, Stock, Haring, & Witter, 1984), superior work outcomes (greater creativity, increased productivility, higher quality of work, and higher income, e.g., Estrada, Isen, & Young, 1984; Staw, Sutton, & Pelled, 1995) and more activity, energy, and flow (e.g., Csikszentmihalyi & Wong, 1991).

ORGANIZATIONAL WELLBEING

With the growth of companies, in terms of employee numbers, and in terms of service quality and complexity, they provide the human factor which has become a prime competitive advantage on the market. Organizational wellbeing is a holistic concept. It can be operationalized from multiple variables. It requires the congruence between the needs and values of employees and the organization and enabling conditions include providing a safe and supportive environment for shared meaning-making effective boundary management, and engaging, invigorating and inspiring employees.

A study run by Gallup on 5000 employees proves that individual wellbeing now produces long-term effects on the organization, in year 1 and 2 after the investments, in terms of enhanced engagement at the workplace. These individuals tend to see their workplace as positive, productive and engaging. Moreover, managers will collect the results stemmed from investments in wellbeing in terms of an open

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organizational culture that challenges and engages employees and will, most keep them loyal to their company. There is a greater need for research in this area.

So, what factors play a role in enabling organizations to thrive in today's world? There is a growing body of literature on the importance of organizational health (Cooper & Cartwright, 1997; Grawitch, Ledford, Ballard & Barber, 2009). Most of research focuses on underlying conditions including programs, policies and practices through which a workplace can be psychologically and physically healthy for employees. There is some philosophical debate about the considerable overlap between health and wellbeing (Ryff &Singer,1998). In support of this view, the WHO (2010) suggests that mental health should be conceptualized as a state of well-being in which an individual realizes his or her own abilities can cope with the normal stresses of life can work productively and can contribute to his or her community.

SCOPE OF WELLBEING

Chronic Happiness Level

Our primary focus is on a person's characteristic level of happiness during a period in his or her life, which is known as chronic happiness level. It is difficult to alter one's happiness level at a moment or on a day. Operationally, one might define a person's chronic happiness level in term of his or her retrospective summary judgments regarding his or her mood and satisfaction during some recent period. People, however, may vary in their "hedonic profiles".

Determinants of the Chronic Happiness Level

There are three primary types of factors that affect the chronic happiness level, namely, the set point, life circumstances and intentional activity. These three factors distinction addresses several important issues and paradoxes. Existing evidence suggests that genetics account for approximately 50% of the population variation and circumstances account for approximately 10% (Argyle, 1999; Diener et al., 1999). This leaves as much as 40% of the variance for intentional activity, supporting our proposal that volitional efforts offer a promising possible route to longitudinal increases in happiness. In other words, changing one's intentional activities may provide a happiness boosting potential that is at least as large as and probably much larger than, changing one's circumstances. Individual's chronic happiness level is in part determined by her or his set point, which is defined as the central or expected value within the person's set range. It is genetically determined and is assumed to be fixed, stable over time, and immune to influence or control.

It is assumed that twin studies (Lykken & Tellegen, 1996; Tellegen et al., 1988), Long-term panel studies (Headey & Wearing, 1989), and studies of the effects of life events on well-being (Brickman et al., 1978) all indicate substantial long-term stability in happiness. For example, Lykken and Tellegen (1996) assessed well-being in twins at 20 years of age and then again at 30 years of age. The cross-twin, the cross-time correlation for the happiness of monozygotic twins was 40 (or 80% of the test retest correlation), suggesting that the heritability of the "stable" component of happiness is approximately .80. In contrast, the cross-twin, cross-time correlation for dizygotic twins was close to zero (.07). Monozygotic twins exhibit considerably more similar patterns of happiness change than do dizygotic twins, providing converging support that the variance in adult happiness is in large part determined genetically.

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So far as the implications of the set point is concerned, the preceding analysis implies that one's chronic happiness during a life period can be increased, but not by changing one's set point, because it is constant. In other words, although it is possible that future scientists will learn how to alter people's basic temperaments and dispositions, at present it appears that focusing on the set point is not a fruitful avenue for happiness increase. Nongenetic factors also influence a person's chronic happiness level, helping to determine whether the person falls in the lower or upper portion of his or her potential range at a time.

Circumstantial factors also include the individual's personal history, that is life events that can affect his or her happiness, such as having experienced a childhood trauma, being involved in an automobile accident, or winning a prestigious award. These factors also include status variables such as marital status, occupational status, job security, income, health and religious affiliation.

Intentional Activity

Individuals are very active creatures, with innumerable behaviours, projects, and concerns to which they devote energy. Intentional activity refers to people can choose to engage may have become habitual. It also assumes that intentional activities require some degree of effort to enact. There is a critical distinction between the category of activity and category of life circumstances. Circumstances happen to people, and activities are ways that people act on their circumstances. This intentional activity can influence well-being.

The research also suggests that the impact of adopting new behaviour on longitudinal wellbeing. For example, faithfully engaging in a new exercise program positively boosts people's mood and vitality and can even maintain the boosts for if 6 months (Stewart et al., 1997). Recent work is also indicating positive effects of prompting people to proactive positive psychological "virtues" such as gratitude (Emmons & McCullough, 2003), hope and forgiveness (McCullough et al., 2000). It suggests that cognitive activity offers many excellent possibilities for happiness interventions (Fordyce, 1983).

After behaviours and cognitions, the third type of intentional activity, recent longitudinal studies have focused specifically on is volitional activity as a producer of enhanced well-being. In such studies, students are asked to pursue self-generated personal goals over the course of semester. High levels of goal progress or attainment consistently predict increased well-being. That means it enhances high positive affect and life satisfaction and decreases negative mood.

Hedonic adaptation can constrain the happiness inducing effect of intentional activities. Sheldon and Lyubomirsky (2004) recently conducted several short term longitudinal studies in which participant's wellbeing (positive affect, negative affect, and life satisfaction) was measured at Time 1, and positive circumstantial and activity based life changes were measured at Time 2. Well-being was then measured twice more, at Time 3 and 4, These investigations found consistent support for a path model, in which both positive circumstantial change and positive activity change predicted enhanced life satisfaction and positive affect at Time3, but only positive activity change predicted and maintained happiness gains at Time 4, with positive circumstantial change dropping out of the model. In other words, consistent with the present model, only activity based well-being change lasted; circumstance based happiness change did not.

Sheldon and Lybomirsky (2004) randomly assigned participants to report on either activity-based positive changes or circumstantially based positive change in their lives. Relative to those in the circumstantial – change group, those in the activity – change group reported a weaker sense of "having gotten used to the change such that it does not give the same boost as before" and more strongly endorsed the

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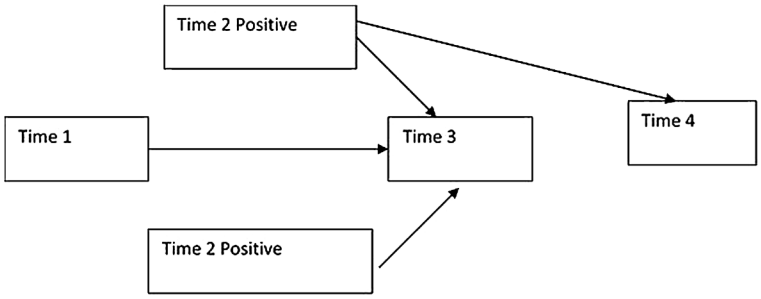
statement "the change is something that varies over time, that is something that adds variety to my life" That means the activity changes are characterized by less hedonic adaptation than circumstantial changes.

Figure 1. Longitudinal Path Model
Adopted from Lyubomirsky, Sheldon & Schkade (2005) Review of General Psychology, 9 (2), 111-131.



Intentional Activity Is Episodic

One feature of activities is that they are episodic and transient. People cannot spend all their time doing one thing. So, it suggests that individual may adapt less readily to new activities than to new circumstances. The episodic nature of activity also suggests that an additional way maximize the impact of activity. Thus, people should strive to discover the optimal timing for each activity, that is, a frequency of engagement that allows that activity to remain fresh, meaningful, and positive for a person.

Intentional Activity Can Be Varied

Another important parameter of behavioural, cognitive and volitional activities is that people can continually vary them, both in their foci and in the way they engage in them. If the person counting his blessings varies the domains of life in which he or she counts them in relationships, in work, in health, or in most recently successful domain, then the strategy may remain "fresh" and meaningful and work indefinitely. Supporting this notion, past research suggests that people tend to seek variety in their behaviour, perhaps because change – both in thoughts and actions- is innately pleasurable and stimulating.

Intentional Activity Can Directly Contract Adaptation

Another advantage of intentional activity is that it can directly tackle the problem presented by adaptation. For example, the cognitive practice of pausing to savor the good things in one's life can directly counteract the effects of hedonic adaptation to one's constant circumstances by drawing attention to the features that produced the initial happiness boost and helping to keep them from being taken for granted. For example, practiced mediators frequently report renewed appreciation of the ordinary as a result of their intentional reencounters with the world.

The fact about intentional activity is that it can directly tackle the problem presented by adaptation. It can directly counteract adaptation and hedonic treadmill helps shed further light on the distinction

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between life circumstances sand intentional activities. The crucial question raised with respect to well-being is whether one exerts intentional effort with respect to the circumstantial category. For example, an individual can engage in a number of intentional activities with respect to the circumstantial category "marriage"; A husband can have the goal of making his marriage work (a volitional activity), he can make the effort to appreciate his wife's positive qualities (an attitudinal activity), and he can try to remember to bring her flowers (a behavioural activity). A person who performs these activities would probably best counteract adaptation to this particular circumstances and derive the most benefit from it. In contrast, a husband who is not intentionally engaged in his marriage, his demographic circumstance would essentially become a background factor. That' why, intentional activity appears to offer the best prospects for increasing and sustaining happiness.

In conclusion, happiness-increasing strategies can be initiated and effectively pursued only with concerted, consistent, commitment and effort.

IMPLEMENTING HAPPINESS-INCREASING STRATEGIES

The strategic issues proceed from the question of how to choose a particular happiness boosting activity to the question of how such activity may be initiated and the question of how the activity can be maintained over time to produce a sustained increase in the chronic level of happiness. The main strategic issues are the role of person activity fit, the role effort, role of habitual activity and the impact of short term versus long term considerations.

Choosing an Activity: The Role of Person Activity Fit

Any repeated activity will not help the person become happier. People have enduring strengths, interests, values, and inclinations that undoubtedly predispose them to benefit more from some strategies than others. For example, extraverts may benefit most from activities that bring them into regular contact with other people, and people high in nurturance motivation may benefit most from activities that afford them opportunities to take care of others. The fit of an activity with a person might be conceptualized in a variety of ways, for example, with respect to individual's motive dispositions, basic needs, core values, signature strengths, personal resources, hedonic profiles, or other individual difference characteristics. There are also a variety of ways that fit might be operationlized, such as in terms of self-reported fit, in terms of consistency between implicit and explicit measures of activity relevant motives, or in terms of informant-rated-person-activity fit.

Role of Effort

Engaging in an activity requires at least two different kinds of effort. First, the effort required initiating the activity and second, the efforts required to carry out and maintain the activity. For example, exercising in the morning, making time to work on at least one important project during the day, or pausing to count one's blessings at the end of the day can have significant benefits, but only if the person can "get off the hurdle" of remembering to do them and overcoming any obstacles to initiating them. This kind of self-regulatory effort requires considerable self-discipline and will-power. In Muraven and Baumesister's (2000) terms, self-regulatory will is like a "muscle" that has limited capacity in each unit of time and

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must be used strategically to avoid fatigue. Some activities will appear intrinsically more appealing and will be easier to jumpstart which is one advantage of selecting an activity that fits one's personality.

Maintaining an activity is the second type of effort. If an activity is to yield sustained happiness change, the person must keep performing the activity over the long term. For effective happiness - enhancing activities, the task will probably be inherently interesting or rewarding and thus will probably be "autotelic" in nature (Deci & Ryan, 2000). That is self-reinforcing and self-sustaining. The person always shifts attention among several projects at work, explores new trials in the state park etc. This is known as "flow" experiences (Csikszentmihalyi, 1990).

By emphasizing the importance of one's intentional activity, it does not mean to imply that people should seek out only "fun" activities. Sometimes choosing to endure boring or even aversive experiences in the short term can have considerable positive effects on chronic happiness in the long run. For example, a naval officer candidate is playing a short-term cost to receive a longer-term benefit (a career as an officer).

Role of Habitual Activity

Habits appear to present a conundrum for our model. We assume that hedonic adaptation occurs only with respect to particular experiences, and not with respect to the decisions that give rise to those experiences. Thus, making a habit out of deciding to initiate an activity is not problematic but may instead help people to keep getting "over the hump". Sometimes it is problematic when people make a habit out of how they implement the activity. When this happens, the flow experience produced by such a habit is likely to remain relatively constant.

Impact of Short-Term vs. Long-Term Considerations

We assume that happiness originates from two sources. First, people make global well-being judgments in part regarding emotions associated with their recent experiences (Kahneman, 1999). If they can recall number of recent affectively positive experiences, then they report being very happy (Sheldon & Elliot, 1999).

Accumulations of need-satisfying daily experiences over time (such as competence, relatedness, and autonomy; Deci & Rayn, 2000) lead to enhanced global well-being at the end of that time. Furthermore, Sheldon and Lyubominsky (2004) found, in their comparison of the sustained effect of circumstantial changes and activity changes on changes in well-being among students, that the more enduring activity-based effects on happiness were mediated by the greater feelings of competence and relatedness associated with activity changes during the semester.

It is meaningful and important to pursue happiness and it is also crucial to find out how this can be accomplished. Simply, happiness seekers might be advised to find new activities that fit their values and interests. They should make a habit out of initiating the activity while at the same time varying their focus and timing in terms of the way they implement the activity. People might be advised to avoid basing their happiness on the acquisition of particular circumstances or objects because they will tend to habituate to such stable factors. Again, one can deter, or delay, such adaptation to positive circumstantial changes by engaging in intentional effort and activity with respect to them. Only life changes involving intentional activity can be expected to lead to sustainable changes in well-being.

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In sum, happiness-increasing strategies can be initiated and effectively provided with consistent, commitment and effort. In addition to the construct of intentional activity, another framework that has been developed in the context of employee happiness involves the model of flow experiences.

THEORETICAL FRAMEWORKS

The purpose of our paper is to find out a series of human resource management policies and practices to improve wellbeing of employees who work in project based organizations, which is a neglected research topic in the field of project management. To achieve the research purpose, firstly we review related theories to explain employee wellbeing and project based organization.

While a number of factors have been identified as correlates of subjective well-being a basic research gap exists with respect to specific theoretical framework. Of course, a few researchers have directed their alternation to integrate empirical findings with the help of a theoretical construct. Although all the diverse findings cannot be accommodated within the scope of a single theory, their relative relevance requires a close examination. Psychological theories related to happiness are telic theories, pleasure and pain, activity theories, top-down versus bottom-up theories, associationistic theories and judgment theories.

Telic Theories

Telic or endpoint theories of subjective wellbeing maintain that happiness is gained when some state, such as goal or need, is reached. One theoretical postulate offered by Wilson (1960) is that the "…satisfaction of needs causes happiness and conversely, the persistence of unfulfilled needs causes unhappiness…"

Alternatively, the theories derive from different origins of the striving. In need theories, there are certain inborn or learned needs that the person seeks to fulfill. The person may or may not be aware of these needs. Nevertheless, it is postulated that happiness will follow from their fulfillment. In contrast, goal theories are based on specific desires of which the person is aware. The person is consciously seeking certain goals, and happiness results when they are reached (Michalos, 1980). Goal and needs are related in that underlying needs may lead to specific goals. Needs may be universal, such as those postulated by Maslow (1954) or they may differ markedly from individual to individual such as those proposed by Murray (1938).

Goals and desires are usually thought of as more conscious than needs. Most individuals had the experience of feeling happy when they achieve some important goal. However, a key question is whether goal fulfillment leads to long-term differences in SWB between persons rather than just short-term mood elevations.

According to telic approaches, there are several things that can interfere with SBW. First, individuals may desire goals that bring short-term happiness but have long-term consequences that are deleterious to happiness because they interfere with other goals. Second, people's goal and desires may be in conflict and thus it is impossible to satisfy them fully. Third, individuals could be bereft of happiness because they had no goals or desires. Finally, people may be unable to gain their goals because of poor conditions or skills.

There are several shortcomings to the current telic approaches. They have rarely been formulated in a clear way and then tested. Many of these approaches are not falsifiable. Needs or goals are sometimes

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described in a circular way, depending on the observations. Clear measures of needs and goals are needed and longitudinal methodologies would help indicate whether achieving the goals actually heightens SBW.

Pleasure and Pain

The idea that gaining goals or needs leads to happiness raises a theme that is pleasure and pain are intimately related. An individual only has goals or needs to the extent that something is missing in that person's life. One assumption in these approaches is that the greater the deprivation (and hence unhappiness), the greater the joy upon achieving the goal. According to the present formulation, if an individual's desire and goals are totally fulfilled, it may be impossible to achieve great happiness.

Another theory that suggests pleasures and pains are intimately connected is the opponent process theory of Solomon (1980). According to this formulation, the loss of something good leads to unhappiness and the loss of something bad lead to happiness. In addition, specific predictions are made about the magnitude of affect. A person will habituate to a good or bad object and thus it will bring happiness or unhappiness with repeated exposure. However, the crucial component of the theory is that opposing affect when the object is lost will be greatest after habituation. This is an addiction type of model which states that with repeated exposure, good items lose their power to produce happiness, but after repeated exposure their loss will produce unhappiness. Initial studies on this theory of happiness have not been supportive (Sandvik & Diener, 1983).

Activity Theories

Activity theories maintain that happiness is a by-product of human activity. Aristotle was a major proponent of one of the earliest and most important activity theories. He maintained that happiness comes about through virtuous activity, that is, from activity that is performed well. According to Aristotle's theory, there are certain human abilities and happiness arises when these are performed in an excellent manner. In contrast, activity theory in modern gerontology refers to activity in more global terms. For example, hobbies, social interaction and exercise are all considered to be activities.

One frequent theme in activity theories is that self-awareness will decrease happiness and there is some empirical evidence for this (Csikszentmihalyi & Figurski, 1982). This is consonant with the popular idea that concentrating on gaining happiness may be self-defeating. According to this approach, one should concentrate on important activities and goals and happiness will come as an unintended byproduct. These ideas have not yet been rigorously formulated or empirically tested.

The most explicit formulation about activity and SWB is the theory of flow (Csikszentmihalyi, 1975). Activities are seen as pleasurable when the challenge is matched to the person's skill level. If an activity is too easy, boredom will develop; if it is too difficult, anxiety will result. When a person is involved in an activity that demands intense concentration and in which the person's skills and the challenge of the task are roughly equal, a pleasurable flow experience will result. Surgery and mountain climbing are offered as prototypes of this pleasurable experience. Unlike goal theorists, activity theorists propose that happiness arises from behavior rather than from achieving endpoints. However, the two ideas are not necessarily incompatible and thus could possibly be integrated.

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Top-Down vs. Bottom-Up Theories

Bottom-up theories maintained that happiness is simply the sum of many small pleasures. According to this view, when a person judges whether his or her life is happy, some mental calculation is used to sum the momentary pleasures and pain. A happy life in this view is merely an accumulation of happy moments. In contrast, the top-down approach assumes that there is a global propensity to experience things in a positive way and this propensity influences the momentary interactions an individual has with the world. In other words, a person enjoys pleasure because he or she is happy, not vice versa. In the top-down approach to happiness, global features of personality are thought to influence the way a person reacts to events. For example, a person with a sanguine temperament might interpret a large number of events as positive.

Associationistic Theories

Many theories are based on memory, conditioning or cognitive principles that can be subsumed under the broad rubric of associationistic models. Cognitive approaches to happiness are in their infancy. One cognitive approach rests on the attributions people make about the events happening to them (Schwarz & Clore, 1983). It might be, for example, that good events bring the most happiness if they are attributed to internal stable factors. Another possibility is that events that are perceived as good lead to happiness, regardless of the attributions made.

One general cognitive approach to happiness has to do with associative networks in memory. Bower (1981) has shown that people will recall memories that are affectively congruent with their current emotional state. Research on memory networks suggests that persons could develop a rich network of positive associations and a more limited and isolated network of negative ones. In such persons, more events or ideas would be happy ideas and affect. Thus, a person with such a predominantly positive network would be predisposed to react to more events in a positive way.

A related type of theory is based on a classically conditioned elicitation of affect. Research has shown that affective conditioning can be extremely resistant to extinction. Thus, happy persons might be those who have had very positive affective experiences associated with a large number of frequent everyday stimuli. Zajonc's (1980) contention that affective reactions occur independently or / and more rapidly than cognitive evaluation of stimuli is compatible with a conditioning approach to happiness.

There is some evidence that a person can give conscious direction to the affective associations in his or her life. Fordyce (1977) offered evidence that a conscious attempt to reduce negative thoughts can increase happiness. Kammann (1982) found that reciting positive statements in the morning leads to a happier day. Goodhart (in press) has found that positive thinking similar to that recommended by Norman Peale is correlated with SWB. Thus, explicit conscious attempts to avoid thoughts and to think of happy ones may to some extent increase happiness.

Certain individuals may have built up a strong network of positive associations and learned to react habitually in positive ways. These individuals are characterized as possessing a happy temperament. A person with a Pollyanna approach to life is perhaps the prototype of a person who has formed positive associations to the world. Several studies have found a relationship between happiness, a cognitive bias towards positive associations and high Pollyanna personality scores.

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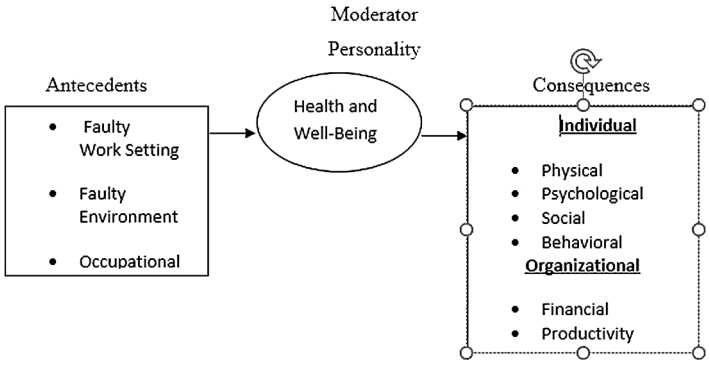
Judgment Theories

Judgment theories maintained that happiness results from a comparison between some standard and actual conditions. If actual conditions exceed the standard, happiness will result. In the case of satisfaction, such comparisons may be conscious. However, in the case of affect, comparison with a standard may occur in a nonconscious way. Although judgment theories usually do not predict what events will be positive or negative, they do help to predict the magnitude of affect that events will produce.

In social comparison theories, proximal others are usually weighted heavily because of their salience. Will (1981) showed that downward comparison with less fortunate persons can increase SWB. Kearl (1981-1982) found that believing others live in poor circumstances can enhance one's life satisfaction. Easterlin (1974) argued that the amount of income that will satisfy people depends on the income of others in their society. One shortcoming to social comparison theories is that they do not make clear when a person will need to make comparisons with others..

One popular form of judgment theory is aspiration level, which maintains that happiness will depend on the discrepancy in a person's life between actual conditions and aspiration

Figure 2. An organizing framework or model



The concept of well-being is the broader and more encompassing construct. Specifically, well-being is viewed as comprising the various life/non-work satisfactions enjoyed by individuals (satisfaction with self, family life, social life, recreation, spirituality, and so forth), work/job-related satisfactions, and general (psychological) well-being. General health/well-being is a state of equilibrium at the physical, mental, social and spiritual domains (World Health Organization).

The Wellness Councils of America (WELCOA, n. d.) reports that 81% of companies with over 50 employees have implemented at least some kind of health promotion program. These programs range from comprehensive wellbeing programs to smoking cessation, back care programs, stress management, exercise, and nutrition programs. For some companies, over half of the company profits are spent toward employee health care expenses.

At the operational level, behavioral scientists have stressed three aspects of the construct definition. First, well-being includes total life satisfaction. It provides an overall assessment of person's subjective well-being. Second, well-being denotes "feel good" component. Majority of Psychologists view that frequent experience of moderately positive affects (emotion) is a more reliable indicator of well-being

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compared with infrequent experience of strong positive emotions. Third, satisfaction in several domains of life (such as work, family, social relation, and so forth) is also an essential component. A comprehensive measure includes an integrated composite index of these three components.

MEASUREMENTS

Well-being is not a unitary construct. There are several components of subjective well-being (SWB): life satisfaction (global judgment of one's life), satisfaction with important domains (e.g., work satisfaction), positive affect (experiencing many pleasant emotions and moods), and low levels of negative affect (experiencing few unpleasant emotions and moods).

In early research on well-being, researchers studied only a single self-report item for measurement. For example, Andrews and Withey (1976) asked participants about the feeling of life as a whole on 7-point scale ranging from delighted to terrible. Current measure of well-being includes multiple items. For example, the *PANAS (Positive and Negative Affect Scale)* assesses both positive and negative affect, each with ten affect items. The gap score between positive affect experience ratings and negative affect experience rating is indicative of wellness or illness.

In the past, researchers have used additional types of assessment to obtain a better gauge of long-term feelings. One such measure in *Experience Sampling Method (ESP).* Considering the view that one-time self-report life satisfaction scale is inadequate, ESM measures life satisfaction and memories of positive and negative life events.

On the basis of World Value Survey –II (World Value Survey Group, 1994) three components of well-being have been recognized: life satisfaction, pleasant affect, and unpleasant affect. The life satisfaction score is based on respondents' answers to the question: "all things considered, how satisfied you are with your life these days?" This was used with the help of number from 1 (dissatisfied) to 10 (satisfied). Later many researchers have adopted this format, but have usually included multi-item scales.

Other physiological measures, reports by informants, memory and reaction time measures are included in order to make measurement complete. Though each of these measures has its limitations, the merits of different kinds of measures are complementary to each other. For example, in the memory measure, participants are asked to generate as many positive and negative events from their lives as they can during a short span of time. With the help of this method, researchers can measure individual difference in the relative accessibility of memories for good and bad events and structure of respondent's recall of their lives.

Diener argues that the frequency count of intense positive emotion is not proper indication of well-being. He viewed that how much of the time a person experiences well-being is a better predictor than positive emotional intensity of how happy the person reports being. Intense positive moments are rare even among the happiest individuals. Instead, happy individuals report mild-to-moderate pleasant emotions most of the time whether they are alone or with others, at work or in free time.

Few other researcher view quality of life (QOL) is an aggregate of objective and subjective components. Each component is divided into 7 domains:

1. **Material Well-Being:** Measured by income, quality of house and possessions
2. **Health:** Measured by number of disabilities and medical consumptions
3. **Productivity:** Measured by activities in work, education and leisure

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4. **Intimacy:** Contact with close friends, availability of support
5. **Safety:** Perceived safety of home, quality of sleep, worries
6. **Place in Community:** Social activities, responsibilities, being asked for advice
7. **Emotional Well-Being:** Opportunely to do/have things wanted, enjoyment of life

Overall QOL is measured by using a point system. Objective QOL uses simple scores and subjective QOL uses satisfaction with domains. Finally, all these scores are added. But limitations of these remain as sum scores fail to give justice to the functional relationships between qualities of life. The value of environmental opportunities depends on personal capabilities. When human capacities fit environmental demands, these needs are satisfied. This manifests in good mood and a satisfaction with life as a whole. So, well-being is both merits in itself and indicative of good of life chances.

In sum, there are various approaches to measurement. The contemporary researchers are adopting multi-measure approach. For example, Sahoo (2006) has developed a multi-measure technique that comprises mainly three parts. The first part denotes overall life satisfaction (global judgment of total life satisfaction). The second part measures domain- specific satisfaction. The third part determines positive affect experience minus negative affect experience. A composite picture of well-being is derived based on these three interrelated scores.

APPLICATION OF WELLBEING IN HRM RESEARCH

The First Research Challenge in HRM is to establish Link between external and internal fit of the organizations. Then deciding on the model of HRM and determining sources of information. The Second Research Challenge is Measuring Outcomes that includes focus has been mainly on performance or output. In the case of performance, need to distinguish proximal and distal outcomes need to broaden to consider a stakeholder perspective. The third research challenge is to understand and explore the implementation of HRM. There are three elements involve in implementations: extent of implementation, influences on implementation, key actors in implementation. Next, we choose qualitative research type and case study research method to collect data.

Gallup scientists have been exploring the demands of a life well-lived since the mid-20th century. More recently, in partnership with leading economists, psychologists, and other acclaimed scientists, we began to explore the common elements of wellbeing that transcend countries and cultures. So, to construct a comprehensive measure of individual wellbeing, Gallup designed an assessment composed of the best questions we have asked over the last 50 years. Upon completion of the research, five distinct statistical factors emerged. These are the universal elements of wellbeing that differentiate a thriving life from one spent suffering. They describe aspects of our lives that we can do something about and that are important to people in every situation we studied. These elements are the currency of a life that matters. They do not include every nuance of what's important in life, but they do represent five broad categories that are essential to most people.

- The first element is about how you occupy your time or simply liking what you do every day: your Career Wellbeing.
- The second element is about having strong relationships and love in your life: your Social Wellbeing.

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- The third element is about effectively managing your economic life: your Financial Wellbeing.
- The fourth element is about having good health and enough energy to get things done on a daily basis: your Physical Wellbeing.
- The fifth element is about the sense of engagement you have with the area where you live: your Community Wellbeing.

While 66% of people are doing well in at least one of these areas, just 7% are thriving in all five.

Figure 3. Essential elements of well-being
Source: Rath & Harter, 2010.

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KEY TERMS AND DEFINITIONS

Design/Methodology/Approach: A summary literature review of the OW literature, focusing on organizational well-being and its possible consequences.

Findings: The literature is used to develop and propose a new model of OW and its success indicators. Testable relationships are proposed between these indicators.

Originality/Value: The model proposed is novel and raises the important issue of appropriate OW success indicators. New propositions are made regarding relationships between antecedents and output variables. This testable model is a valuable resource for researchers. Further, for human resource managers, the model provides a framework for considering what they are aiming to achieve and how they might experience it. Most employees assume wellbeing or happiness is a state of mind. But it is not. There is substantial amount of research to show that the meaning of wellbeing shifts in very systematic ways over the due courses and even throughout the day.

Practical Implications: The paper provides a model that leaders, managers and newcomers may find useful to successfully establish the OW process.

Purpose: The aim of this paper is two aspects: to provide an overview of organizational wellbeing (OW) research; to present a new model of OW focusing on successful outcomes and its operationalization of the construct and the recommendations for future.

Research Limitations/Implications: The research model has not been tested empirically. It is an external representation, is a new and untested concept in the OW literature.

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Chapter 4
Burnout:
A Challenge for Companies in the Modern Business Environments

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ABSTRACT

The present paper deals with burnout as a challenge of our modern business world, given the phenomenon of heavy work investment in our society. The present article is emphasizing the strong connection between business, psychology, and medicine when dealing with people working in a modern, international business environment. The research methods are multi-disciplinary, combining elements of business, corporate culture, psychology, and even medical issues that are relevant in this context. The research methods used in the present paper are qualitative methods, metadata, and interviews (the questionnaire as a qualitative method) completed by the assessment of data and by proposing appropriate indicators ensuring the monitoring of burnout tendencies in companies. The paper proposes an interdisciplinary approach, bringing together aspects of business and economics, psychology, life sciences, sociology, ethical issues, and cultural issues related to work. A tool for detecting burnout is analyzed. The research results can be relevant for managers and human resources departments.

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INTRODUCTION

In former times, jobs were meant to ensure an income for the employees. People did not really assess the tasks they were performing, their job satisfaction or the fulfilment achieved by the job. It was only important to have an income to cover the costs of living. Nowadays the values when choosing a job have changed. Employees do not only want to earn money, they search for the right job, which suits them best and that helps them develop their skills. For many employees, jobs are nowadays a form of validation. This change of values related to the working culture has a strong impact on employers, on human resources departments and on the job culture within a company.

In modern times, people spend more time in the office than in former times. The work investment increases, people invest their energy and their time in working and in achieving good job-related results. A consequence of this development is the phenomenon of "workaholism". People seem to be dependent on their jobs and they cannot leave their job tasks when arriving home. Even in their spare time, they are thinking about their job and their tasks. The work-life balance is difficult to achieve and to keep, given these circumstances. Some companies used to have extremely high expectancies about work investment, an approach that encouraged people to work extra-hours to have a better performance. Some of the employees could not face these long working hours and collapsed. Other employees did not collapse, but they suffered several disorders. One of these modern times disorders is burnout. Burnout can be described as a state of fatigue due to work overload. Employees are often not aware of such a disorder. They believe it is a temporary state of mind of sadness or of dissatisfaction with their job or a temporary exhaustion that will disappear after a few days off. But the disorder does not disappear, it becomes visible at somatic level. Employees start to feel sick. At this point the employee has difficulties in performing his tasks and in cooperating with his colleagues.

The present article deals with the topic of burnout illustrated as a challenge of our modern business world. The occurrence of this phenomenon is related to the heavy work investment in our society, aimed to fulfil job expectations. The present paper analyses the impact of burnout within a company, considering its impact on employers and employees. It further deals with the topic of finding the right balance related to the proper workload. Too heavy work investment may cause burnout, but underload at work may cause "bore out", which is another disorder at psychological level. The present paper addresses the question how to deal with these challenges of the modern business world, what measures should companies, managers and human resources departments consider given this development and the change of values in job culture. Case studies illustrate these issues. Metadata is considered, such as the 6th European Working Conditions Survey (EWCS) – 2015 and 2017 as well as the specific literature. Interviews are used as a qualitative research method. The qualitative approach is complemented by quantitative analysis of data and indicators provided by European Union institutions and OECD and surveys such as the European Values Survey. It is nevertheless difficult to find comparable data, as there is a research gap in analyzing burnout at cross-national level. This is why metadata is being considered.

As an aspect of novelty and originality, the present article presents a tool that could be implemented at company level to detect burnout or to detect when employees have reached too heavy work investment. Such a tool could be useful in organizations, so that the research results can be used by human resources managers.

The topic is analysed using an interdisciplinary approach, considering elements of business, economics, psychology, life sciences as well as sociological, ethical and cultural issues related to the work environment.

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Given the negative consequences of stress at work, burnout and related depression, work-life balance has become a key-issue of corporate culture, which shows the relevance of the present research. The present article is emphasizing the strong connection between business, psychology and medicine when dealing with people working in a modern, international business environment.

REVIEW OF THE SCIENTIFIC LITERATURE

A consequence of heavy work investment, a common phenomenon in our modern working environment, is work overload which can lead to psychological disorders of the employees, such as burnout. It is interesting to address the question whether burnout is a problem of our modern society and of our current working culture or if it existed already in former times. This question is researched in the scientific literature. The present paper creates a bridge between already studied issues and new challenges of the modern business environment.

Burnout as an independent diagnosis is a relative new issue in our business environment and therefore, there is a research gap of cross-national studies regarding this topic at European Union level. Burnout was often diagnosed as a preliminary phase before depression and was not necessarily treated as an independent topic to be researched, but it was treated together with other subjects related to depression. Nowadays the approach has changed, as burnout might be a problem for companies, for employers and for employees and measures at corporate level and at the level of the human resources department might be necessary. In the light of these recent developments and given the identified research gap, it is a subject to be researched in the future.

The problem why there are no clear statistics about people suffering from burnout is that such people are afraid of being stigmatized if they are diagnosed with a psychological disorder and they are afraid of losing their jobs if they speak about their problem (Wolf, 2016, p 8).

The topic was first approached in Graham Greene's book "A Burnt-Out Case" that appeared in 1960 (Greene, 1960), presenting the life story of a famous, successful architect who lost the joy of working and decided to leave Europe and move to Africa in order to look for people in need. This story shows the fact that burnout is not a brand-new issue in our society, as the psychoanalyst Herbert Freudenberger and the social psychologist Christina Maslach researched and identified it in former times (Melchers and Plieger, 2016, p.13). The fact that burnout is related to modern times can be described as a myth, because it actually appeared as well in the past.

According to the psychologist Christina Maslach burnout is a state of fatigue, correlated with low performance at work and a need of distancing to other co-workers as well as to the job tasks (Melchers and Plieger, 2016, p.13).

People affected by burnout have headaches, they do not care about accomplishing their job goals any more, they feel tired all the time, they suffer from insomnia, they are not motivated at work (Melchers and Plieger, 2016, p.14).

Some specialist diagnose burnout as an individual illness, some other specialist see it as a preliminary state prior to depression, so there are no clear research findings yet in order to implement a clear delimitation between these two disorders (Melchers and Plieger, 2016, p.13).

People who feel they have control over their life and activities suffer more if they make mistakes, it is difficult for them to accept failure and they feel guilty for this failure. This leads to the tendency of blaming oneself for each failure and to burnout due to failures in the tasks at work (Burisch, 2014;

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Melchers and Plieger, 2016, p.14). In conclusion, being confident that you can solve every problem and that this attitude will keep you safe from burnout is only a myth.

Another myth regarding burnout, which is treated in the specific literature, is the fact that bad working conditions are the cause of burnout. This is not proven, as more responsibility and more decisions to take are rather factors encouraging burnout than performing tasks given by your superior, for which he has bears the responsibility (Melchers and Plieger, 2016, p.16).

Another factor which is important is the change in values regarding job culture in our society. It is important not to choose a job only for having the best salary, but to choose a job that suits you best. Social aspects, like the positive attitude towards helping colleagues and the assessment of employees according to their willingness to help their colleagues can be measures used by companies in order to minimize burnout (Twenge et al, 2010, p. 1117-1142; Melchers and Plieger, 2016, p.17). The change in values related to job culture is illustrated as well in the European Values Study, 2020 (European Values Study, 2020). Another survey analyzing values related to working culture is the 6th European Working Conditions Survey (EWCS) (Eurofound, 2020).

A difference between burnout and depression is the fact that burnout is strictly related to work and to the working environment (Plieger, T. et al., 2015, pp. 19-24). This idea supports the importance of the working environment when researching burnout.

For managers and human resources departments, burnout is a challenge, as they have to find the proper balance of workload for their employees. Too heavy work investment can lead to burnout, while work underload and lack of activity can lead to boreout (Melchers and Plieger, 2016, p.15).

Another aspect treated in the specific literature is perfectionism as a feature of working culture and as a feature of personality of employees. Too much perfectionism can lead to burnout, as there is a heavy work investment correlated to the expectation of being perfect when carrying out job tasks (Flett, 2007, pp. 255-277; Altstötter-Gleich, C., 2016, p. 74).

What companies and organizations can do in order to minimize burnout is to be reasonable in demanding performance from the employees and to consider mindfulness as a value of corporate culture and of the working culture (Ducki, A., 2016, p. 82). The implementation of such measures can help organizations to face the challenges of the modern business environment, such as burnout.

RESEARCH METHODOLOGY

The present paper proposes a multidisciplinary research method, showing the strong interaction between business, economics, psychology and life sciences in the working environment.

The article presents how the topic of modern challenges of the business environment, such as burnout, boreout and work-life balance, which are connected to the phenomenon of work investment, are illustrated in the specific literature.

Qualitative research methods, such as the structured interview are complemented by the assessment of quantitative data provided by European Union institutions and international organizations dealing with this topic.

Data used is available in the Sixth European Working Conditions Survey conducted by Eurofound, an Agency of teh European Union. Another source of analysed data is the European Values Study.

Metadata and meta-analysis are used in the present research. A limitation of the present research is given by the fact that there are not yet cross-border studies related to the topic of burnout. These will for

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sure be needed and will for sure be conducted, as this is a challenge for many employers, dealing with the problem that their employees suffer from burnout. Metadata is considered as a research basis, as it is difficult to find comparable data on this topic, which would be helpful in analyzing burnout at cross-national level at European Union level and would fill the identified research gap.

The structured interview is used as a qualitative method in order to investigate the opinion of respondents related to dealing with failure. The research was conducted in March-April-May 2020, having 102 respondents enrolled at the Bucharest University of Economic Studies in Human Resources Programs. This qualitative research method is used, as the respondents will the future human resources managers dealing with the challenge of modern working environment, such as burnout.

The structured interview is used as a qualitative method in order to research working habits and the working culture of employees within multinational companies or companies acting as international players.

Case studies from companies are as well used in order to illustrate the impact of burnout as a challenge of the modern working environment in organizations.

It is important to point out the importance of the topic burnout as a challenge of the modern working environment, as it affects more and more people nowadays. Awareness rising in this field might help to achieve prevention of this syndrome.

As an element of originality and novelty, a tool for detecting burnout is analysed in the present paper. The research results can be relevant for managers and human resources departments.

Aspects of psychology, business, economics, corporate culture, values related to working habits and to working culture, even medical aspects are being considered in the present paper, analysing the topic from various perspectives, in an interdisciplinary manner.

RESULTS AND DISCUSSION

Burnout – A Challenge of the New Working Environment

A famous architect can no longer work, as he does not find any joy or satisfaction in his job (Greene, 1960). The decides to quit and no longer works as an architect.

An employee has insomnia and cannot focus on his job tasks. He has headaches, gastrointestinal complaints and feels tired. So tired that writing an e-mail is a challenge for him.

An estate-agent with bad results during the financial crisis thinks he is the only person responsible for his failure. He is not good enough. The context does not matter for him.

All these examples are patients suffering from burnout. They are case studies showing that this syndrome can affect any of us.

Burnout is not new, but it is new to deal with it as a challenge in the modern working environment. Burnout-cases are not isolated cases of people performing a job that does not fit them. It becomes a common situation, which is difficult to solve both for the employer and the employee. The situation developed in this direction when people wanted to earn more, not just to cover the current costs of living, but to be validated by their job. On the other side job expectations from employers became more and more complex and difficult to fulfill. Employees had to work extra-hours in order to finish their tasks. At the beginning, this was not seen as a real problem. But with health issues becoming a problem for more and more employees, burnout become a common disorder for people with heavy work investment.

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The problem is that people are afraid of being diagnosed with burnout, as it is a psychological disorder. They are afraid that they will lose their jobs or that they will be isolated by other colleagues, knowing they have a psychological problem. But burnout is not a temporary state of mind, it is a biochemical disequilibrium in the brain that will persist. The next step is depression. Without taking action, without the proper treatment, things will only get worse.

The lack of consensus is as well on the medical side, as some medical doctors find burnout as an independent diagnosis, while some other see it as a step before depression. This is why it is difficult to find accurate statistics and data related to burnout. Some of the cases are covered in the statistics related to depression, so that it is difficult to gain a clear image only over burnout affected people.

Researching how burnout became a challenge in companies, a change of values and of habits related to the working culture has to be considered. A job is not only a form of ensuring income. It is a form of validation. Employees need to feel that the job is THE ONE for them. If it does not fulfil their expectations, they are disappointed. If the job is not the right for them, but it brings them a lot of money, they try to keep it, working against their talents and their skills. Pressure to fulfil job-tasks combined with the disappointment of not fulfilling them well enough or quick enough, correlated with low job performance despite high efforts bring a state of fatigue and job-related dissatisfaction. The way to burnout is open.

Nowadays, people do not only fulfill job tasks – they have to convince other people, they have to be the image of the company they represent, so that the emotional involvement of the employee in fulfilling his tasks is higher than it was in the past. But the question is, which is the price they have to pay for this involvement and whether a heavy working investment would bring them benefits or not.

People suffering from burnout tend to become cynical and to distance themselves from their job and from their colleagues. This affects working relations. This type of behaviour has negative consequences on the abilities to work in a team and to solve job related issues. Distancing from co-workers and being cynical or feeling worthless are behaviours with a negative impact on the job performance. In a first stage, the cause of this behaviour must be identified, or the behaviour can be misunderstood or taken personally by other colleagues. At this point in time, the human resources department must take action.

Measures to be Taken by Companies for Dealing With the Challenges of Our Modern Working Environment

Companies must be aware of this real problem which is burnout. They should try not the have too high expectations regarding the job performance of their employees. Human resources managers and managers generally should accept the idea that employees need some time to relax, that they sometimes have a bad day, when their performance is not so good and they should get over this situation. They should try to be empathic and they should try to share values like mindfulness as a value of corporate culture. Moreover, managers should try to understand the needs of the employees and to be reasonable when asking constantly high performance from them.

Employees need time to relax, time to meditate and to regenerate. This is why some companies, especially from the United States of America have chosen to rethink the design of the working place. Case studies in the literature show that some of them offer spaces for relaxing for their employees. Some offer couches for employees, as a space to relax for a few minutes after performing a difficult task or when having a difficult day. Even the 20 minutes nap has proven to be a regenerating means of increasing productivity at work accepted by some managers. Other companies offer the possibility for sports and even organize contest between the employees, encouraging the employees to benefit from these opportunities.

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Events organized after work are as well measures taken by companies in order to help their employees relax and to consolidate the teams. Empathy at work is easier to be achieved if there is as well empathy at personal level, at human level. Trying to be human, not only to perform job tasks is a way of dealing with challenges pf the modern working culture.

Unlike in former times, employees working extra-hours are not at all appreciated. Working extra-hors is not encouraged and people choosing to work extra-hours are not necessarily well assessed. If an employee works extra-hours, this does not mean that he is very ambitious, but it rather means that he has a problem with time management and with being efficient. There is a change of paradigm in expecting employees to work extra-hours, compared with former times. Of course, habits differ from one field of work to the other. But especially multinational companies encourage their employees to finish their job tasks within the regular working hours.

On the other hand, if burnout is already a challenge within the company, managers should revise their attitude and try to be reasonable in re-integrating people suffering from burnout after their treatment. Managers have a problem with reintegrating an employee who suffered a burnout syndrome, as this employee is extremely sensitive, and it is possible that his affection reappears.

A Tool for Detecting Burnout

When burnout is installed, there is need to act and to treat it, as it is not just a temporary mood. It is a psychological disorder. Human resources managers should be aware of this issue as well as mangers of companies. It is easier to prevent burnout than to treat it. In order to identify people suffering from burnout in early stages or even to identify them at all (as some cases remain hidden all the time), a tool for detecting burnout via an interview would be very helpful for managers and for human resources departments. Periodical assessments of employees focused on identifying burnout risks would be extremely helpful to prevent or to treat burnout, if already installed. These assessments could focus on the aspects presented in Table 1.

This tool may be used as a check-list in a periodical interview with each employee, organised by the human resources development or organised by each manager wishing to find out if his employees have burnout symptoms. If the above mentioned symptoms are confirmed by the employee, it means that the employee has a high rish to develop burnout syndrom. It may also be used as a self-assessment-tool by the employee.

Finding the Proper Balance Between Burnout and Boreout – A Difficult Task for Employers and Employees

Burnout is a challenge in companies in the context of heavy work investment and work overload. But the other extreme – work underload is as well a challenge and can have a negative impact on the job performance of the employees. How to find the proper balance between these two extremes is a question that managers and human resources departments have to think about.

Boreout is a psychological syndrome caused by too much boredom at work. This can occur if the job tasks are not interesting enough, too easy or simply do not suit the employee. Although the consequences in terms of health issues are not as bad as they are in the case of burnout, boreout might as well affect the psychological well-being of the employee. The employee feels demotivated and there is obviously no joy or passion related to his work.

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Table 1. A tool for detecting burnout

Symptoms	Do I Have Burnout?
Fatigue	→ I feel very tired while working → I am tired already at the beginning of the working day → Writing an e-mail is for me a difficult task that makes me tired → I find my job exhausting
Lack of interest in work	→ My job is useless → I am useless → I am not interested in the quality of my performance, it does not matter anyway → I find my job frustrating
Isolation from co-workers	→ I do not care about cooperating with my coworkers, it is anyway useless → I do not understand and I do not want to understand my co-workers → I do not care about the problems of my co-workers
Tension	→ I feel a permanent tension related to my job → I find my job stressful → Small problems related to job-tasks make me angry → I cannot control myself
Guilt	→ I am guilty for my weak performance at my job → My supervisors blame me for the failure of the company
Somatic level	→ Headaches → Lack of capacity to focus → Gastro-intestinal problems → Insomnia

Source: Own research based on Maslach, C. et al, 1996, cited in Falkai, P., 2016, p. 23.

The difference between burnout and boreout is that burnout is a severe syndrome which can be a preliminary stage of depression. Demotivation caused by boreout may in time as well lead to depressive episodes, but the symptoms are less violent than in case of burnout.

3.5. Solutions to Fight Against Burnout and Boreout

What companies could implement in order to find the proper work life balance and thus avoid both burnout and boreout, is to promote innovation within the company and to encourage the employees to try new things, if they feel like their job does not suit them well. Not being afraid of failure is an attitude that can be trained and that could lead to more job satisfaction. As well is the positive attitude towards new ideas, new jobs or new job tasks. Encouraging employees to try new things will make them confident and will increase their job satisfaction.

A company studied in the literature tried to motivate its employees to try new, innovative ideas by promising a failure bonus. For that company, it was important that the employees come with new ideas to innovate, even if some of them were not successful. Being afraid to try something new was considered to be a bad option, as it would inhibit people to innovate due to fear of failure.

In order to find out how young people position themselves related to this concept, an own research was conducted among students enrolled at human resources programs at the Bucharest University of Economic Studies, by means of a structured interview used as a qualitative research method. These students were chosen as respondents, as they will be future managers in human resources departments, having to deal with the challenges of the modern working environment. The research was conducted in March-April-May 2020. There were 102 respondents participating in this research. The results of the

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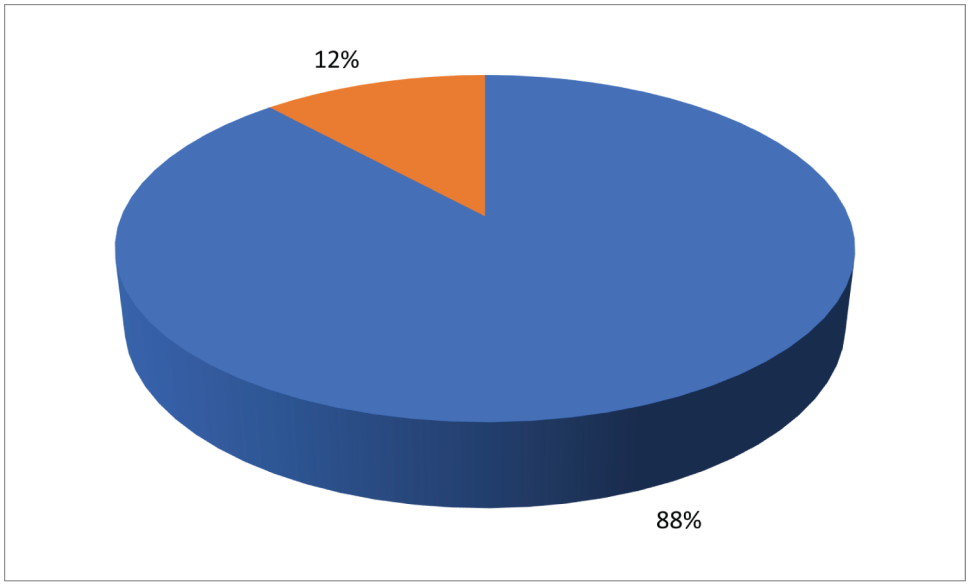
research show that the vast majority of the respondents (88%) find the idea of a failure bonus a very good measure for improving innovation within the company and for promoting an innovation-oriented attitude within the company.

The results of the own conducted research are illustrated in Figure 1.

Figure 1. A Failure Bonus – A Good Idea for Promoting Innovation within the Company?



Source: Own representation based on own conducted research

At a first assessment, the idea of a failure bonus leads to the conclusion that it could be used as an instrument to enhance innovation within the company and thus to avoid bore out among the employees.

Nevertheless, when asked if they would be motivated by such a bonus, only 37% of the respondents would be happy to receive such a bonus. The idea is thus considered to be good in theory, but the fear of failure still exists at personal level, which makes people avoid failure. In other words, the idea of a failure bonus is good in theory but no one really wants such a bonus.

These results of the own conducted research are illustrated in Figure 2.

The use of such a tool in order to avoid boreout among the employees has thus its limitations, due to the fact that there is no clear attitude yet towards the acceptance of failure. It is in principle all right to accept failure, but this remains a theoretical acceptance, it is not truly felt be the employees. As a research result, a change of culture regarding the acceptance of change, with its positive and negative implications, still has to take place.

Between the illustrated two extremes regarding work investment, which are burnout and boreout, most companies try to find the proper balance in work investment, which means as well supporting work-life balance and promoting it as part of the corporate culture.

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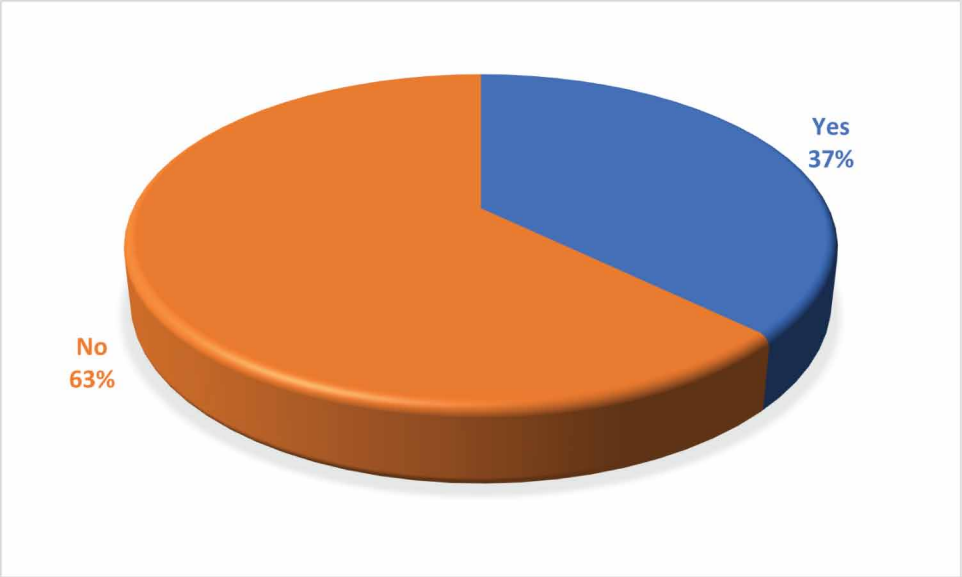
Figure 2. Would you be motivated by a failure bonus?



Source: Own representation based on own conducted research

The fact that work-life balance is an important aspect when assessing a job is the result of the development of a mindful, reasonable attitude towards work of both employers and employees. The change of values related to work and working culture needs to be considered when trying to find the proper balance in work investment.

As pointed out in the studied surveys, work intensity is an important factor for assessing job quality and it refers to the physical workload as well as to the emotional workload related to the job (Eurofound, 2017, pp. 36-37). Work-life balance is as well an indicator for job well-being and for evaluating job quality (Eurofound, 2017, p. 40).

A good indicator for monitoring and preventing burnout is the Work Intensity Index, promoted in the Eurofound survey (Eurofound, 2017, pp. 48-51). If this indicator would be periodically assessed and a monitoring of the employees with risk to burnout would be ensured, then the burnout cases in companies could be kept under control or could even be reduced.

Burnout is directly connected to long working hours. At least once in a month, 32% of the respondents of the survey performed by Eurofound had a long working day, with more than 10 hours a day (Eurofound, 2017, p. 57.) This result at European Union level is illustrated in Figure 3.

In the European Union, men work on average about 3 long days per month, while women work 1,5 according to the survey (Eurofound, 2017, p. 57.) This research result is illustrated in Figure 4.

CONCLUSION

As a conclusion of the present research, finding the proper workload when assessing work investment is a key issue in order to deal with the challenges of the modern working environment, such as burnout and boreout. A proper work-life balance can help employees to prevent burnout.

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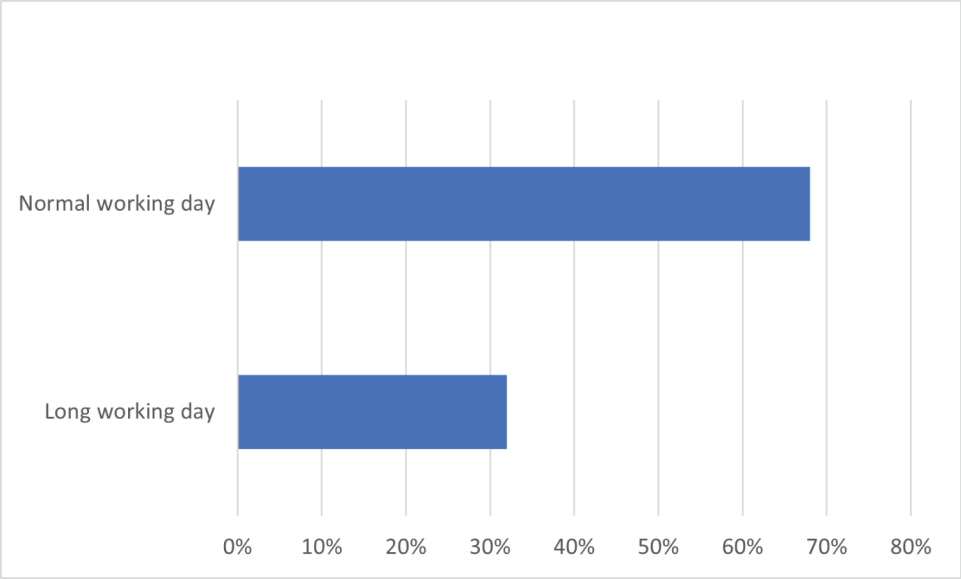
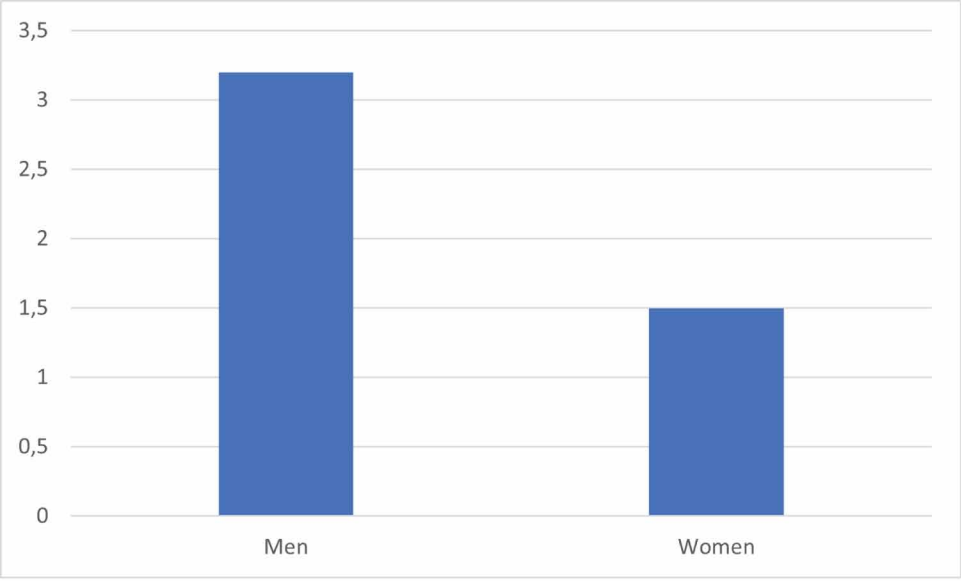
Figure 3. Working days in the European Union



Source: Own representation based on Eurofound, 2017, p. 57.

Figure 4. Long dasy per month – men versus women in the European Union



Source: Own representation based on Eurofound, 2017, p. 57.

The present research gives an interdisciplinary perspective on the topic of the challenges of the modern working environment, such as burnout and boreout, considering aspects of business and psychology.

A limitation of the present research is the fact that there are no cross-national studies on burnout at European Union level yet, so that it is difficult to find comparable data.

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The topic of heavy work investment is one of great interest in the current business world. Dealing with burnout as a challenge of the modern working environment is a challenge to be faced by companies. With more and more employees suffering from burnout, it a topic of great interest that will need further research. The research results of the present research can be used by managers or human resources departments, they can be improved and developed in further research projects. As a research gap was identified in this field, further research will be more than welcome.

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Chapter 5
Considerations of the Mental Workload in Socio-Technical Systems in the Manufacturing Industry:
A Literature Review

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ABSTRACT

As cognitive tasks have displaced physical tasks in today's manufacturing industry, this sector can demand high levels of mental workload from workers. In certain situations, there is a high cognitive load, which affects operators reducing their attention to the task and causing them mental fatigue and distractions, resulting in errors that generate economic costs or even injuries to workers. This literature review aims to provide a comprehensive understanding the use of mental workload in the manufacturing sector. The methodology consisted of conducting a search in four databases. In the search, a combination of keywords was used, classifying each journal according to the mental workload evaluation means, the type of evaluation, and the area of application. Articles not focusing on the manufacturing area were discarded. Of the total of 3839 articles found, 12 have been selected. Regarding the methods used for mental load assessment, the analytic techniques were found to be the most frequently used.

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INTRODUCTION

Currently, due to industries' growing automation, this sector's modern socio-technical systems feature great complexity (González Munõz & Gutiérrez, 2006). Despite such automation, there are still tasks in industry where people are necessary and even indispensable (Autor, 2015). For example, whenever automation has been viable, simple tasks which previously required several workers with a low level of qualification have turned into complex tasks requiring fewer workers with a higher level of knowledge, that is, with complex cognitive skills that involve decision making, improvisation, handling of information, and failure diagnosis, among others (Beaudry, Green, & Sand, 2013), so as to complement the automated systems. On the other hand, there are also tasks that have not been automatized successfully, but where, ironically, the level of complexity has increased (Mital & Pennathur, 2004). This has occurred in tasks that require people's mental abilities, or in cognitive tasks such as those mentioned above, which cause workers' mental load to tend to increase and exceed their capacities and limitations to perform their work efficiently and safely. On the other hand, a low workload level is also undesirable as it can cause workers to fall into complacency (González Munõz & Gutiérrez, 2006) and to generate errors derived from distractions or lack of attention.

Based on the foregoing, it can be said that mental workload evaluation is a key point in research and, in general, in all those activities that seek higher levels of comfort, satisfaction, efficiency and safety in the workplace (Rubio, Díaz, Martín, & Puente, 2004).

Therefore, the main objective of this work is to determine the state of the art of the assessment and consideration of mental workload into modern socio-technical systems of the manufacturing industry by means of a systematic literature review. Additional objectives of this work are to analyze important characteristics of actual available mental workload evaluation and assessment techniques such as training time, administration time, tools needed, advantages and disadvantages, among others. Also, once some selection criteria are established among the articles found, the most frequently used and widely applied techniques must be identified. Finally, to offer recommendations about the pertinence of the use and evaluation of mental workload in the manufacturing environment and operations is convenient to propose future research trends.

BACKGROUND

Whenever any type of work is done, the body undergoes two types of loads: a physical one and a mental one. The physical load is constituted by the biomechanical, physiological and caloric requirements that the worker's body demands, while the mental load refers to the cognitive processing requirements necessary for good performance at work (González Munõz & Gutiérrez, 2006) although currently there is no consensus as to which factors are most closely associated with mental load (Rubio, Díaz, & Martín, 2001).

Mental Workload Evaluation and Assessment

There are different techniques for evaluating mental work load. According to various authors (Dalmau & Ferrer, 2004; González Munõz & Gutiérrez, 2006; Stanton, Hedge, Brookhuis, Salas, & Hendrick, 2004; Stanton, Salmon, & Rafferty, 2013; Young, Brookhuis, Wickens, & Hancock, 2015), these techniques can be grouped into:

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- Analytical.
- Primary task performance measures.
- Secondary task performance measures
- Physiological measures.
- Subjective-rating techniques.

Analytical techniques are those that are carried out through mathematical models and computer simulation. Because of modern computerized systems, this type of techniques has seen a boom over the years.

Primary task performance measures involve measuring the worker's ability to perform the primary task being analyzed. The expectation is that a worker's capacity decreases as the mental work load increases. Some of the advantages of this type of measurements are: their sensitivity to variations in the workload and their ease of use. Some of the disadvantages, on the other hand, are that performance can be affected during low workload tasks and that the level of mental workload can be affected by the worker's experience and skill.

On the other hand, Secondary task performance measures focus on analyzing the worker's ability to perform an additional task to the primary. This type of measurements is based on the assumption that as a worker's mental load increases, his/her ability to perform the secondary task will decrease due to the reduction of the remaining mental capacity, so that the performance of the secondary task will be affected. The main advantages of this type of measurements are the following: it features greater sensitivity in evaluating the mental load during short periods, since secondary tasks, unlike primary ones, are executed in short periods of time; also, it allows for the evaluation of a reserved mental capacity. Its main disadvantage lies in the lack of sensitivity to minor variations in the mental workload.

Next, physiological measures are based on the fact that certain cognitive activities have been associated with physiological variations in people, that is where the variation in heart rate, eye movement and brain activity can be affected by an increase or decrease in the mental workload. The main advantage of these measurements is that they do not interfere with the performance of the primary task. The disadvantages are that this type of measurement is affected by the worker's health and that the equipment needed to carry it out is costly.

Finally, subjective-rating techniques analyze the worker's perception of the complexity of the task. The techniques are generally carried out after the task has been executed and can be classified as one-dimensional or multidimensional, depending on the workload dimensions that they evaluate. When one-dimensional techniques are used, the data obtained are easy to analyze, whereas multidimensional techniques entail a higher level of diagnosis. The advantages of this type of techniques are its ease of use, its speed of application and its low cost. One of its main disadvantages is that, often, the mental work load ratings correlate with the worker's performance in the task under analysis. Also, participants are likely to forget certain parts of the task where variations in their workload may have occurred. Lastly, this type of techniques is the most widely used for evaluating mental workload.

To evaluate the mental load perceived by the subject, one-dimensional scales are used, which contemplate a single load factor, or multidimensional scales, which break down the load factor into other factors. Also, the scales can be classified into absolute or relative. The first ones are based solely on the task under study, while the second, on their comparison to another standardized task in which the assessment is relative or multiple. These scales are usually administered immediately after the completion of the task.

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Criteria for Mental Workload Assessment

According to Eggemeier, Wilson, Kramer, and Damos, cited in (Rubio et al., 2004), there are several criteria that any mental workload evaluation technique must meet:

- **Sensitivity:** Refers to a technique's ability to detect changes in the levels of difficulty in the task or in its demands.
- **Diagnosticity:** An index should identify not only when a load varies, but also the cause of this variation. The diagnostic power of a technique results from its ability to detect the type of attentional resources that produce the mental load in a specific task. It is this information that makes the implementation of better solutions possible.
- **Selectivity / Validity:** The index should be selectively sensitive only to differences in the capacity demands and should not reflect changes in factors such as the physical load or the emotional stress, which may not be associated with the load.
- **Intrusiveness:** The index should not interfere with the completion of the task whose load is being evaluated.
- **Reliability:** Like any other behavior measure, a load index must be reliable. If the mental load is evaluated at different times (i.e. changes in mental load that occur during the course of a task or operation), it is important for the index to offer a reliable and consistent estimation of the mental load.
- **Implementation Requirements:** Includes aspects such as the time, the implementation and the software necessary for data collection and analysis, as well as the degree of operator training required to obtain valid results.
- **Subject Acceptance:** Refers to the perception that subjects have of the validity and usefulness of the procedure.

Mental Workload Assessment Techniques

Among subjective techniques, those that stand out are:

- Modified Cooper-Harper (MCH) Scale.
- Bedford Scale.
- Subjective Workload Dominance (SWORD) and Pro-SWORD
- Subjective Workload Assessment Technique (SWAT) and Pro-SWAT
- NASA-Task Load index (Nasa-TLX)
- Workload Profile (WP)
- Multiple Resources Questionnaire (MRQ)
- Subjective Mental Workload Scale (SCAM)

Modified Cooper-Harper (MCH) Scale

It was developed by Cooper and Harper (1969) and modified by Wierwille and Casali (1983) and is the oldest one-dimensional, subjective evaluation technique. It was originally developed to evaluate the mental load associated with aircraft piloting tasks and other related activities through a scale scored from

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1 to 10, along with a decision tree that would help the operator estimate the mental load. Originally, this scale was used to obtain pilots' subjective ratings on the level of control of an aircraft; therefore, the result of the scale was based on the capacity to control the aircraft and also on the level of entry required by the pilot to maintain adequate control. The Modified Cooper Harper's scale is based on the assumption that there is a direct relationship between the level of difficulty in controlling the aircraft and the pilot's workload (Stanton et al., 2013).

Bedford Scale

Like the MCH, it was developed for piloting tasks and related activities (Ellis & Roscoe, 1982; Roscoe & Ellis, 1990). It is based on the assumption that the mental load of a pilot is determined by the integration of the mental and physical efforts required to meet the demands of specific elements of the piloting task. Essentially, it analyzes the remaining attentional capacity and involves the use of a hierarchical decision tree to evaluate the participants' workload through evaluating the available capacity while performing a task. The scale is usually filled in after the task has been completed, but it can also be administered during its execution (Stanton et al., 2013).

Subjective Workload Dominance (SWORD) and Pro-SWORD

This technique was introduced by Vidulich (1989) and is a derivation of the Analytic Hierarchy Process (AHP), which is a technique used to deal with complex decisions. SWORD uses task comparison by means of pairs, in order to obtain mental workload ratings for individual tasks. The SWORD technique is performed after the execution of the task and calls for participants to rate the predominance of a task over another in terms of their mental workload. Pro-Sword was developed from SWORD by Vidullch, Ward, & Schueren (1991) to be used in predictive environments. When used predictively, tasks are classified according to their predominance before and after the test begins to check the sensitivity of the predictions (Stanton et al., 2013).

Subjective Workload Assessment Technique (SWAT) and Pro-SWAT

Developed by Reid and Nygren (1988), this technique was used originally to evaluate the mental workload in the US Air Force, evaluating mainly pilots in the cabin environment. It is based on the assumption that the mental workload is a multidimensional construct, which is why time load, mental effort load and stress load are all taken into account. It is administered at the time of completing the task. After an initial assessment procedure, participants are asked to rate each dimension using a scale of 1 to 3. Next, a score is calculated for each dimension and a global score for mental workload of between 1 and 100 is obtained. On the other hand, Pro-SWAT is a derivation of SWAT which is used in a predictive way. Pro-SWAT requires evaluators who are knowledgeable about a task to create a mental projection of the operation of the defined system, imagining themselves performing the task, and then reporting on the magnitude of the workload "experienced" at specific times (Eggleston & Quinn, 1984).

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NASA-Task Load Index (Nasa-TLX)

NASA TLX is a multidimensional, subjective evaluation technique presented by Hart & Staveland (1988). According to several authors, it is one of the most widely used subjective techniques in evaluating mental workload (Bommer & Fendley, 2018; Rubio et al., 2004; Stanton et al., 2013; Young et al., 2015). It identifies six dimensions of subjective load: mental demand, physical demand, temporary demand, effort, performance, and frustration level. In general, this instrument involves two steps in sequential order. During the first step, a comparison is drawn, by pairs, among the 6 dimensions that make up this technique; then an assessment is made, on a scale of 1 to 100 with intervals of 5 each, of the role that each dimension has played in the evaluation. In general, this technique is performed immediately after the task has been performed.

Workload Profile (WP)

This technique was elaborated by Tsang & Velazquez (1996) based on the Multiple Resources Model (MRM) proposed by Wickens (1984). It is a multidimensional, subjective technique that makes use of the following dimensions: perceptual/central processing, response selection and execution, spatial processing, verbal processing, visual processing, auditory processing, manual output, and speech output. Before its application, participants must be instructed regarding the dimensions that the MRM handles. Afterwards, once the task has been performed, participants evaluate the resources used during the execution of the task, using a range from 0 to 1, where 0 means that there is no demand for resources and 1, that the task uses up all available resources.

Multiple Resources Questionnaire (MRQ)

The MRQ was developed by Boles & Adair (2001). According to Phillips & Boles (2004), it is based on the Expanded Multiple Resources Theory (EMRT), an evolution from the MRM which was proposed by Boles & Law (1998). It is a multidimensional technique whose dimensions, based on the available processes, include: auditory emotional, auditory linguistic, facial figural, facial motivation, manual, short term memory, spatial attentive, spatial categorical, spatial concentrative, spatial emergent, spatial positional, spatial quantitative, tactile figural, visual lexical, visual phonetic, temporal visual and vocal. For its administration, it is required that the participants be instructed on the principles of the MRQ before executing of the task. After task execution, participants are to evaluate each one of the dimensions, based on a scale of the 0 to 4, thus indicating the level of resources they used for each dimension evaluated.

Subjective Mental Workload Scale (SCAM)

The SCAM is a subjective evaluation technique developed by Rolo González, Díaz Cabrera, and Hernández Fernaud (2009) in 2009. The development of the scale was based as well on the review of the theoretical literature as on the analysis of other instruments in use, taking into consideration three major dimensions or sources of mental load: temporal demands of the task, processing resources demanded by the task and aspects of an emotional nature. The scale developed is characterized by being multidimensional and subjective, based on the approach of the high relevance of the worker's perceptions, competence, and

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training, which may affect his assessment of the difficulty or level of effort of the task, or what is also known as "workload experience".

Each of the abovementioned techniques has a number of advantages and disadvantages, all of which are shown in Table 1 along with several characteristics of the various techniques.

Table 1. Characteristics of the mental load evaluation techniques

Technique	Training Time	Execution Time	Tools Needed	Advantages	Disadvantages
Primary task performance measures	Low	Low	Simulator, computer	1) They provide a direct performance index. 2) They are particularly effective measuring the workload in long-duration tasks. 3) They can be easily used along with secondary task performance, subjective and physiological measures.	1) They do not always distinguish between workload levels. 2) They are not a reliable measure for isolated measurements.
Secondary task performance measures	Low	Low	Simulator, computer	1) They are sensitive to mental load variations whenever these go undetected by performance measures. 2) Ease of use 3) Indentifying the secondary task is slightly more difficult.	1) They have been found to be sensitive only to big changes in mental load. 2) They are intrusive in measuring the performance of the primary task. 3) Special care must be taken when designing the secondary task in order to maintain the same resources used in the primary task.
Physiological measures	High	Low	Heart rate monitor, follow-up of eye pupil, EEG	1) Several physiological measures have proven to be sensitive to mental load variation. 2) Data are recorded continually during the test. 3) They can be used in real-world applications.	1) Data can be affected by external interference. 2) Equipment is temperature-sensitive and hard to use. 3) The measuring equipment is physically uncomfortable.
MCH Scale	Low	Low	Paper and pencil	1) Quick and easy to use; it requires little training and has a low cost 2) Widely used in various areas 3) The data obtained are easier to analyze than multidimensional instruments.	1) It measures low sophistication loads. 2) Limited to manual tasks 3) Not as sensitive as TLX or SWAT
Bedford Scale	Low	Low	Paper and pencil	1) Quick and easy to use; it requires little training and has a low cost.	1) More complex than one-dimensional techniques 2) The data are collected after the tests. There is already a certain amount of problems due to correlation with performance.
SWORD	Low	Low	Paper and pencil	1) Quick and easy to use; it requires little training and has a low cost. 2) Very effective when comparing the mental workload caused by two or more interfaces.	1) More complex to analyze tan one-dimensional techniques 2) The data are recorded after the tests. There is a certain number of problems due to correlation with performance.

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Table 1. Continued

Technique	Training Time	Execution Time	Tools Needed	Advantages	Disadvantages
Pro-SWORD	Low	Low	Paper and pencil	1) Quick and easy to train for and administer 2) Wide validation levels	1) Based on data which are approximations of mental load 2) Not widely used
SWAT	Low	Low	Paper and pencil	1) Quick and easy to use; it requires little training and has a low cost 2) Multidimensional 3) Subscales are generic, allowing their use in various areas	1) More complex to analyze tan one-dimensional techniques 2) Several studies suggest that TLX has greater sensitivity to mental load variations 3) MWL classifications may correlate with task performance
Pro-SWAT	High	High	Paper and pencil, software	1) Simple and efficient method to predict mental load 2) May be applied to any task.	1) It is in its first stages of development and has yet to be validated. 2) Little sensitivity to mental load
NASA-TLX	Low	Low	Paper and pencil	1) Quick and easy to use; it requires little training and has a low cost 2) Better performance than SWAT 3) Features a generic scale, which allows it to be administered in any environment.	1) More complex to analyze tan one-dimensional techniques 2) Weighing procedure is painstaking 3) Suitable for individual mental load only.
Workload Profile Technique	Medium	Low	Paper and pencil	1) Quick and easy to use; it requires little training and has a low cost 2) Based on a solid theoretical foundation	1) More complex to analyze tan one-dimensional techniques 2) Data ae collected after the tests. 3) More complex than other mental load techniques
MRQ	Medium	Low	Paper and pencil	1) Quick and easy to use; it requires little training and has a low cost 2) Based on a solid theoretical foundation	1) More complex to analyze tan one-dimensional techniques 2) Data ae collected after the tests. 3) More complex than other mental load techniques
SCAM	Low	Low	Paper and pencil	1) Quick and easy to use; it requires little training and has a low cost 2) Features a generic scale, which allows it to be administered in any environment.	1) It is in its first stages of development. 2) More complex to analyze tan one-dimensional techniques. 3) Not widely used

Source: (Boles & Adair, 2001; Rolo González et al., 2009; Stanton et al., 2013)

Issues, Controversies, and Problems

Failure to take the mental workload into account for design within the industrial sector can generate some problems which can impact both the worker's health and the company's economy.

Workers exposed to a high mental load tend to lose concentration, which results in lower levels of attention and an increase in their risk levels (Chen, Song, & Lin, 2016) so that accident rates also tend to increase. Having jobs where workers are exposed to high mental workloads, can influence the organization, affecting the relationship between employees and administrators (Bowling, Alarcon, Bragg, & Hartman, 2015).

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In light of the above, mental workload has been found to have effects on physical health, causing symptoms or general health complaints that are indicators of coronary heart disease. The reason is that mental workload has effects on the variability of the heart rate. As the load increases, the heart rate decreases while at the same time, the respiratory rate increases. In addition, the effects of mental workload on musculoskeletal disorders have been demonstrated by various studies and manifest mainly in discomfort in the neck and shoulders (González Munõz & Gutiérrez, 2006).

On the other hand, both overload and a sub-load can have effects on workers' mental health. That is because each individual has an optimal workload band. Constant upward or downward deviations from this band will probably cause stress (Dalmau & Ferrer, 2004; González Munõz & Gutiérrez, 2006).

Fluctuations in workload can also result from an irregular flow of work, which is not under the worker's control. This is not only restricted to the pace in the production lines; many times, it depends on the climatic conditions; also, a great variety of jobs are governed by the work station demands or the production needs. Finally, certain workers, such as air traffic controllers, firefighters and pilots, must undergo long periods of inactivity, yet suddenly, they must take action when a crisis occurs. This is potentially harmful if the employee fails to respond appropriately in an emergency (Rubio, et al., 2001).

As was already mentioned, the impact of the mental load on workers can generate health problems or economic losses both for the worker and for the companies. According to Ayaz et al. (2012), the lack of evaluation of the mental workload in the industrial sector impacts mainly on the workers' performance and can result in a series of errors that can, in turn, trigger catastrophic losses.

According to Stanton et al. (2013), there is a great variety of methods to evaluate the load, but their implementation is complicated as there is no defined unit to measure the level of mental load (Rolo González et al., 2009). There is also the fact that most mental load-related jobs were originally developed from models used in the aviation sector (Vidulich & Tsang, 2012); thus, for other sectors, it is necessary to adapt and/or validate mental load evaluation differently.

METHODOLOGY

The methodology followed by this work includes four stages: selection of databases, selection of keywords, depuration of results and final selection.

Selection of Databases

To select the databases where the search would be conducted, those that showed a greater number of indexed journals were searched, focusing mainly on the areas of engineering and manufacturing.

Keyword Selection

Once the databases were identified and based on the advanced search characteristics of each of them as well as on the number of quality results, a series of words were selected which would be used to perform the searches.

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Depuration of Results

After the results of the advanced searches in the selected databases were obtained, they were exported to various files for depuration. Once these results were obtained, they were classified according to the following criteria: the mental workload evaluation used, the type of evaluation (physiological, subjective, etc.), and the sector of application (aviation, manufacturing, health centers, education, others), and the number of participants. Items that did not meet at least three of these criteria were eliminated as were those that were duplicated.

Final Selection

After this first depuration, those articles that focused on the manufacturing area were set aside. Once the articles were pre-selected, their entire content was analyzed. The following final criteria for selection was used: each article had to be a peer-reviewed, research article, and its application and/or development had to target manufacturing systems.

RESULTS

Below are the results obtained during the four stages described in the methodology.

Selection of Databases

The databases selected for this study were: ACM DL, IEEE Xplore, ScienceDirect and Web of Science. They were chosen because they met the criteria of number of indexed journals and focused primarily on the engineering and manufacturing sectors.

Selection of Keywords

Because the advanced searches for articles are different in each database, in order to obtain quality results, searches were conducted using different keywords. For the ACM DL and IEEE Xplore databases, the selected keywords were: mental and workload. For ScienceDirect, and in order to reduce the number of articles obtained in the search, the logical operators AND, OR and NOT were used; thus, the keywords were: mental, workload, evaluation, design, manufacturing, industry, nurse, medical and driver. The relationship in which these words and the logical operators were used is shown in Figure 1. Finally, for the Web of Science database, the logical operators AND, OR and NOT were also used. However, due to the databases' characteristics, the keyword "TS =" was added, by means of which it was specified that the search would be conducted within the fields of Abstract, Title or Keywords of a registry. Additionally, it was specified in the search options that the search ought to include scientific articles only.

Depuration of Results

A total of 3839 articles were found in the first searches. In the column "First Search" in Table 2, are shown the number obtained from each database. All search results were saved in spreadsheets for analysis.

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Figure 1. Relationship between keywords and logical operators used for the ScienceDirect database

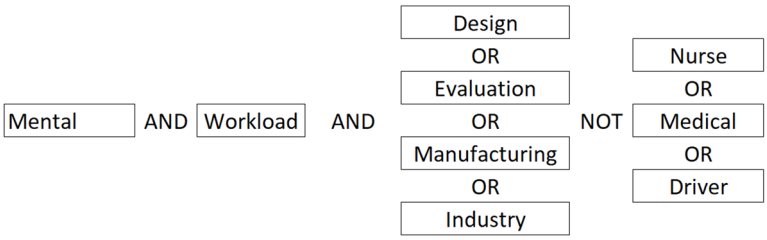
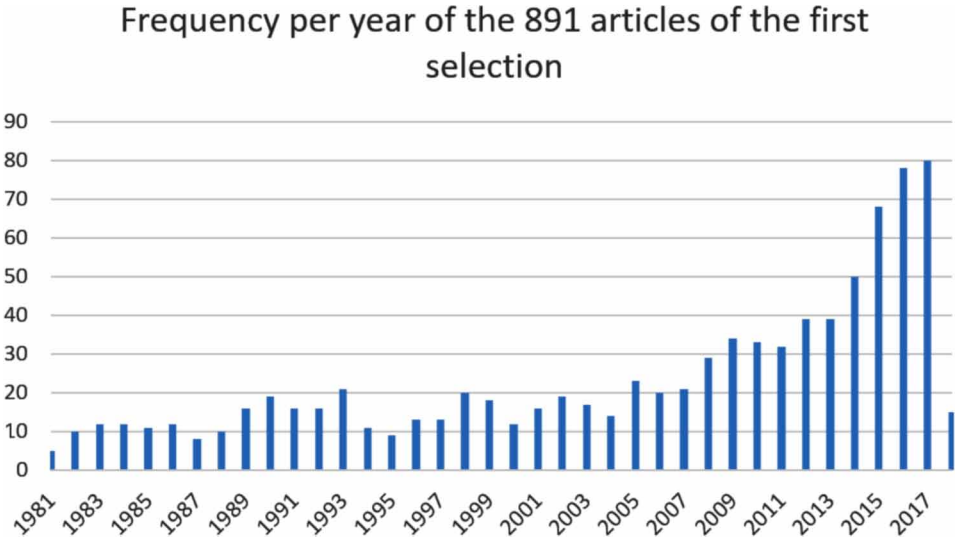


Table 2. Number of articles found by database

Database	Number of Articles			
	First Search	First Selection	Second Selection	Final Selection
ACM DL	56	5	0	0
IEEE Xplore	362	86	4	0
ScienceDirect	3065	658	85	9
Web of Science	356	142	16	3
Total:	3839	891	105	12

Once the articles were classified based on the mental workload evaluation used, the type of evaluation of this (physiological, subjective, etc.), the area of application (aviation, manufacturing, health centers, education, others), and the number of participants, and based on the aforementioned inclusion criteria, the number of articles was reduced to 891, this is shown in the column "First Selection" in Table 2. The Figure 2 shown the frequency, by year, of the articles selection. Figure 2 shows the frequency of the first selection of elements, in which you can observe a trend towards the increasing publication of articles of mental workload.

Figure 2. Year of publication of the articles of the first selection



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For the next stage, out of the 891 articles obtained from the previous stage, a pre-selection was made of those articles that met the criteria of being focused on the manufacturing sector; thus, the number of articles was reduced to 105. The column "Second Selection" in Table 2 shows the number of preselected articles per database.

Final Selection

For the final selection, in the articles where it was available, the total content of the article was analyzed; this included the Abstract, the introduction, the literature review, the methods, the discussion and the conclusion. At this last stage, 12 articles were selected. The number of articles selected per database is shown in the column "Final Selection" in Table 2, while Table 3 shows the general characteristics of the selected articles.

In five of the articles, various analytical techniques were used; in three of them, NASA-TLX was used; in one, the MCH was used; in two, they did not specify which technique was used; and in another, two techniques were used, one analytical and one subjective (NASA-TLX), this is showed in Table 4. In terms of seniority the oldest article was from the year 1999, while two of them were published this year (2018). Figure 3 shows a graph that contains the year of publication of the articles and where you can see that it is only in the last few years that there has been the greatest interest.

Regarding the area in which the 12 selected articles are focused, it was found that in seven of them the operator's performance is analyzed, in 3 of them is considered the mental workload in the design of the manufacturing systems, 1 is focused on the training area and 1 is focused on planning.

DISCUSSION

Mental work load evaluation has undergone a great change in recent years. It has been gradually incorporated into various sectors, without leaving those where it originally began (aviation sector); thus, its full implementation in the industrial sector's socio-technical systems is now a reality.

During the conduction of this work, only 12 of 3839, which is (approx.) 0.31% percent of the articles analyzed, focused on and/or had been implemented in the manufacturing industry. Returning to Figures 2 and 3, it can be observed that although there has been an increase in the number of articles published per year relating to the mental workload, the application in the manufacturing industry has been marginal. This leaves a research opportunity where assessment and evaluation of the mental workload in the socio-technical systems of the industrial sector can be implemented in a practical and reliable way.

As for the mental workload assessment instrument, and regarding the subjective techniques, these were used in 5 of the 12 selected articles, the most widely used is NASA-TLX, which was used in 4 on these articles. According to the authors of these articles, NASA-TLX was selected because it is the most widely known and used subjective assessment technique (Bommer & Fendley, 2018; Brolin et al., 2017; Sealetsa & Thatcher, 2011; Tang et al., 1999) which is in line with the opinions of recognized authors (Rubio et al., 2004; Stanton et al., 2004, 2013).

It can also be observed that the use of subjective techniques in the assessment of the mental workload is one of the most commonly used, since, as can be appreciated in Table 1, they present a low level of complexity in their implementation, because it is practically only necessary to use paper and pencil.

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Table 3. Characteristics of the selected articles

Author	Title	Journal	Date	Type of Evaluation	Reference
Shuxin Bi and Gavriel Salvendy	Analytical modeling and experimental study of human workload in scheduling of advanced manufacturing systems	International Journal of Human Factors in Manufacturing	January 1, 1994	Analytical	(Bi & Salvendy, 1994)
Sharon Claxton Bommer and Mary Fendley	A theoretical framework for evaluating mental workload resources in human systems design for manufacturing operations	International Journal of Industrial Ergonomics	January 1, 2018	Subjective (NASA-TLX)	(Bommer & Fendley, 2018)
Anna Brolin, Peter Thorvald and Keith Case	Experimental study of cognitive aspects affecting human performance in manual assembly	Production & Manufacturing Research	January 1, 2017	Subjective (NASA-TLX)	(Brolin, Thorvald, & Case, 2017)
Lin Ding-Yu and Hwang Sheue-Ling	The development of mental workload measurement in flexible manufacturing systems	Human Factors and Ergonomics in Manufacturing & Service Industries	December 7, 1998	Analytical	(Ding-Yu & Sheue-Ling, 1998)
Friedhelm Nachreiner	Standards for ergonomics principles relating to the design of work systems and to mental workload	Applied Ergonomics	August 1, 1995	N/A	(Nachreiner, 1995)
M. Bevilacqua, F. E. Ciarapica, G. Mazzuto and C. Paciarotti	Visual Management implementation and evaluation through mental workload analysis.	IFAC Proceedings Volumes	May 1, 2013	Subjective (MCH)	(Bevilacqua, Ciarapica, Mazzuto, & Paciarotti, 2013)
Celestine A. Ntuen	The application of fuzzy set theory to cognitive workload evaluation of electronic circuit board inspectors	Human Factors and Ergonomics in Manufacturing & Service Industries	June 1, 1999	Analytical	(Ntuen, 1999)
O. J. Sealetsa and A. Thatcher	Ergonomics issues among sewing machine operators in the textile manufacturing industry in Botswana	Work	January 1, 2011	Subjective (NASA-TLX)	(Sealetsa & Thatcher, 2011)
Kuo-Hao Tang, Richard J. Koubek, Nancy J. Lightner and Gavriel Salvendy	Development and validation of a theoretical model for cognitive skills acquisition	International Journal of Industrial Ergonomics	April 1, 1999	Analytical and Subjective (NASA-TLX)	(Tang, Koubek, Lightner, & Salvendy, 1999)
Shezeen Oah, Rudia Na and Kwangsu Moon	The Influence of Safety Climate, Safety Leadership, Workload, and Accident Experiences on Risk Perception: A Study of Korean Manufacturing Workers	Safety and Health at Work	February 9, 2018	N/A	(Oah, Na, & Moon, 2018)
Lin Ding-Yu and Hwang Sheue-Ling	Use of neural networks to achieve dynamic task allocation: a flexible manufacturing system example	International Journal of Industrial Ergonomics	June 27, 1998	Analytical	(Ding-Yu & Sheue-Ling, 1998)
Xiaosong Zhao, Chia-Yu Hsu, Pei-Chann Chang and Li Li	A genetic algorithm for the multi-objective optimization of mixed-model assembly line based on the mental workload	Engineering Applications of Artificial Intelligence	January 2016	Analytical	(Zhao, Hsu, Chang, & Li, 2016)

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Figure 3. Year of publication of the final articles selection

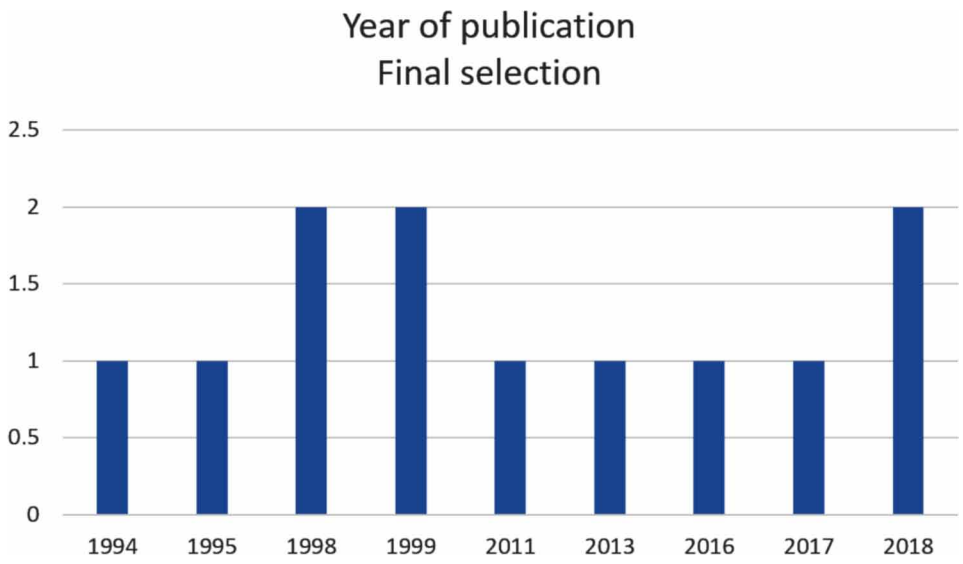

Table 4. Type of evaluation used in the selected articles

Type of Evaluation	Qty	Reference
Analytical	6	(Bi & Salvendy, 1994; Ding-Yu & Sheue-Ling, 1998, 1998; Ntuen, 1999; Tang et al., 1999; Zhao et al., 2016)
Subjective (NASA-TLX)	4	(Bommer & Fendley, 2018; Brolin et al., 2017; Sealetsa & Thatcher, 2011; Tang et al., 1999)
Subjective (MCH)	1	(Bevilacqua et al., 2013)
N/A	2	(Nachreiner, 1995; Oah et al., 2018)

In the case of analytical techniques, these are the most commonly used and are used separately for each case and are presented to support a particular model. Also, they are focused mainly on predicting the mental workload, and only one case of study (Ntuen, 1999) use a subjective technique to validate their model.

FUTURE RESEARCH DIRECTIONS

As mentioned in the results section, half of the articles selected in this review were published within the last five years, and two of them were even published as this work was being prepared. Thus, it is necessary to note that mental load evaluation focusing on the manufacturing industry is gradually incorporating the mental workload and that due to the time constraints on the article's search, some articles may have been overlooked.

It should also be kept in mind that, although many of the items discarded in this work were not directly related to manufacturing, in many of them the techniques and methods can be adapted to the

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socio-technical systems of the manufacturing industry. For example, many of the case studies carried out in the fields of transportation or medicine can be carried out within the industrial sector as well.

CONCLUSION

Due to the various problems derived from the lack of consideration of mental workload in several fields, the relevance of its incorporation into the design and evaluation of current manufacturing systems and processes is highlighted in this chapter. Moreover, the risks of having mental overload or sub load during tasks execution have an impact on workers' performance that tends diminish incurring in work stress, human error, poor quality of life at work and reduced productivity.

As a result of the comprehensive literature review, the number of research articles found in 4 of the main databases is insufficient. In this manner, the field of mental workload research in socio-technical systems is a challenge and represents an opportunity for researchers working in the area of cognitive ergonomics, industrial engineering, industrial psychology among other emerging fields. At the moment a concrete approach for its measurement and evaluation is still pending and represent the most important obstacle for including mental workload assessment and consideration in work and process design in manufacturing and sociotechnical environments.

Additionally, among the articles found for the subjective techniques, the NASA-TLX is distinguished as the most widely used for mental workload and present advantages for its easiness of use, its sensitivity, non-intrusiveness, its diagnosticity, its validity, its subject acceptance and relatively low cost of their implementation.

ACKNOWLEDGMENT

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KEY TERMS AND DEFINITIONS

Cognition: The activity related to the acquisition of knowledge.

Cognitive Ergonomics: The branch of ergonomics that is interested in mental processes such as perception, memory, reasoning, and motor response, to the extent that they affect the interactions between human beings and the other components of a system.

Database: In the academic field, they are repositories of information that may contain references to books, journals, conference proceedings, and theses, among others.

Mental Workload: Refers to the set of strains inflicted on a person by the demands of the mental work that he/she performs.

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Socio-Technical Systems: Refers to the integration in the company as it consists of a technical system (equipment and production methods) and a social system (a group of men) that interact with and complement each other.

Stress: Associated with the state that results from events that generate anxiety or overwhelmingness. When a person receives demands that are excessive, he/she will begin to feel anxiety and to experience various symptoms.

Subjective: In the field of mental load assessment, subjective instruments are those in which the mental workload is not measured directly, but indirectly.

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Chapter 6
The Diversity Paradox

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ABSTRACT

The diversity paradox is an organizational emphasis placed upon one potential understanding of diversity which, paradoxically, deemphasizes alternative expressions of individual difference. An organizational focus on representations of gender, for instance, synchronously moves the focus away from sexual orientation; an focus on sexual orientation synchronously moves the focus away from age; and so on. The diversity paradox commonly manifests via six interrelated tenants. First, organizational discourses promote a fractionated understanding of what it means to be a diverse organization, resulting in a visible hierarchy of difference and the sense of false attainment among its leadership. Among organizational members, this false attainment results in neglected representation for certain minorities, as well as diminished alternatives for organizational life and an increased level of potential tokenism. The present article explores the diversity paradox in more detail, including its background, six primary tenants, and future recommendations.

INTRODUCTION

The diversity paradox is an organizational emphasis placed upon one potential understanding of diversity which, paradoxically, deemphasizes alternative expressions of individual difference. An organizational focus on representations of gender, for instance, synchronously moves the focus away from sexual orientation; an organizational focus on representations of sexual orientation synchronously moves the focus away from age; and so on. This article explores *the diversity paradox* in more detail, including its background and six primary tenants: fractionated understanding, visible hierarchy, false attainment, neglected representation, diminished alternatives, and potential tokenism. The article concludes with recommendations for both researchers and lay leaders alike whom hope to cultivate healthier organizational milieu.

The diversity paradox is an especially significant phenomenon in today's increasingly diversified society. Perhaps nowhere is this phenomenon more salient than within the United States. The percentage of Americans who self-identify as white has been in steep decline for decades, and this diversification is

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only projected to continue in the coming decades. Today, approximately 60% of those living in the United States identify as white, 17% as Latinx, 12% as black/African American, 5% Asian, and 1% American Indian/Alaskan Native. Yet by the year 2055, the percentage white Americans is predicted to decrease by nearly 15 percentage points, resulting in the United States no longer having a single racial/ethnic majority (Pew Research Center, 2016). This trend in increased diversification is mirrored elsewhere as well – fueled by political alliances in the European Union, immigration policies in South America, international trade agreements in North America, and so on (Rice, 2010).

Despite the increased diversity in countries like the United States – or perhaps because of it – issues of racial/ethnic inequality continue to plague our world. This reality is evident whether measured by income inequality (Glazer, 2005), health disparities (Dillon, Roscoe, & Jenkins, 2012), education levels (Closson, 2010), or incarceration rates (Ward, Farrell, & Rousseau, 2009). For these reasons, it is more important than ever for contemporary organizational leaders and scholars to learn how to engage with culturally diverse voices, perceptions, and taken for granted assumptions. The diversity paradox contributes to this need for increased understanding by revealing specific ways that diverse members manage tensions and limitations, thus, holding promise for improved racial/ethnic relations within intercultural contexts, organizations, and society writ large.

BACKGROUND

The diversity paradox first emerged as a theoretical framework during Jenkins' (2013, 2014a, 2014b, 2014c) four-year ethnography of Central Community Church (pseudonym) – an intercultural congregation located in Tampa Bay's urban corridor. In reference to Christian Scriptures that depict a culturally diverse body of believers (see Matthew 28:9; Acts 17:26-27; Revelation 7:9, New International Version), Central Community strove to "reflect and impact the specific realities of [its] surrounding community" (Jenkins, 2014a, p. 7). Thus, Central Community actively promoted diversity via church literature, congregational events, and communal outreach efforts. A majority of sermon topics addressed the need for organizational diversity, and the church's website described itself as "a multi-ethnic community… transforming the world through Jesus Christ" (Central Community, 2015, par. 3).

After 48 months of fieldwork, which yielded over 300 hours of observations, 140 pages of notes, and 30 semi-structured interviews with organizational leaders and members, Jenkins (2014) found Central Community's organizational emphasis on diversity to have several unintended consequences. Although admirable on the surface, the church's limited view of diversity as physical representations of racial/ethnic difference was found to paradoxically diminish the opportunity for alternative expressions of individual difference (see Jenkins & Dillon, 2014). Minority members' attempts to conform to Central Community's white normative practices unintendedly resulted in forced assimilation and self-disciplining; consequently, the church's emphasis on cultivating a diverse congregation actually served to limit possibilities of organizational life – a phenomenon hereto referred to as *the diversity paradox.*

The diversity paradox has since been observed in additional contexts across the United States, including both religious and secular organizations. A study by Santis, Graham, and Jenkins (2019) of Central Faith Church in the greater Los Angeles area, for instance, revealed a similar tension surrounding the notion of organizational diversity. Such additional studies not only evidence the diversity paradox's prevalence, but also its potential to help inform a wide range of religiously and geographically diffuse settings.

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PRIMARY TENANTS

The diversity paradox is shown to manifest itself via six interrelated tenants: (1) fractionated understanding, (2) visible hierarchy, (3) false attainment, (4) neglected representation, (5) diminished alternatives, and (6) potential tokenism. First, organizational discourses promote a *fractionated understanding* of what it means to be a diverse organization, resulting in a *visible hierarchy* of difference and the sense of *false attainment* among its leadership. Among organizational members, this false attainment results in *neglected representation* for certain minorities, as well as *diminished alternatives* for organizational life and an increased level of *potential tokenism*. The present section further outlines each of these six tenants in turn.

Fractionated Understanding

The notion of diversity has become a normative reference for many organizational leaders and members when discussing racial, ethnic, and cultural equality. Diversity is exalted by nonprofit and for-profit organizations alike as being a central priority (Bunn & LaCour, 2009), key source of strength (Richard, 2000), and present-future goal (Unzueta & Binning, 2010). As a result, many organizations go out of their way to publicize the value they place upon creating and maintaining diversity via advertisements, job calls, promotional materials, and formal mission statements (Kidder et al., 2004; Kochan et al., 2003). In 2001, the United Nations Educational, Scientific and Cultural Organization (UNESCO) went as far as to declare that "cultural diversity is as necessary for humankind as biodiversity is for the nature" (par. 12).

Despite an increased value and emphasis on diversity, however, its meaning is still not clearly defined among the general public (Bell & Hartmann, 2007; Unzueta & Binning, 2009). Such ambiguity affords a broad understanding of diversity's potential role and definition: variations in age, gender, religion, nationality, marital status, economic income, education level, able-bodiedness, sexual orientation, political affiliation, or linguistic disposition, to name but a few (see Coalition for Cultural Diversity, 2010). Because of this broad range of possibilities, organizational leaders commonly focus on one potential expression of the term. Rather than embracing diversity's broad range of possibilities, they choose to extol one fractionated understanding (Mill, Pinnegar & Polunin, 2007).

Originating in the field of chemistry, the term *fractionation* initially referred to the separation of an isotope into smaller quantities (O'Neil, Clayton, & Mayeda, 1969). Fractionation has since been used as a theoretical framework to describe the subdivision of large, complex concepts within social science into smaller, more palatable ideas. Thus, by subdividing an issue like diversity into smaller parts and focusing upon only one potential understanding, organizations are able to make sense of a potentially overwhelming topic. This process has also shown to alleviate the emotional load associated with resolving controversial issues, and to facilitate a better working relationship between organizational members.

Although useful in many instances, such a fractionated approach to diversity is problematic because it inherently neglects opposing perspectives. Jenkins' (2014a, 2014b, 2014c) and Sabrina, Graham, and Jenkins' (2019) aforementioned studies of Central Community and Central Faith respectively found organizational leaders to value difference; yet as a result of their fractionated understanding, they each expressed this value exclusively through differences in race/ethnicity. This reality was evidenced via racially/ethnically diverse band members, promotional materials featuring stereotypical phenotypes, and even frequent challenges by the lead pastor of Central Community for congregational members to interact with others who "looked different" than themselves. Thus, organizational leaders within both

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Central Community and Central Faith came to overlook alternative conceptions of diversity. Such a fractionated understanding also discounted the way differing expressions of personal identity intersect with one another (i.e., intersectionality), while simultaneously creating a visible hierarchy of difference.

Visible Hierarchy

A fractionated understanding of diversity commonly results in the valuation and devaluation of particular types of difference. In the same way that organizational metaphor inherently emphasizes one insight while simultaneously deemphasizing others, an emphasis place upon one aspect of diversity simultaneously deemphasizes alternative aspects. As Hamburger and Itzhayek (1998) write: "Metaphor… determines the way people perceive, remember, and analyze information they receive. However, any single metaphor limits people's perception by blocking and distorting the information encountered… They are like people speaking in different languages" (p. 383). Hence, by focusing solely upon one understanding of diversity, organizational leaders can come to view this form of difference as being more valuable than other potential forms.

This visible hierarchy created by *the diversity paradox* typically serves to elevate visible manifestations of difference within a given organizational context. Said differently: organizational hierarchies of difference are usually based on physical and visual representations of racial/ethnic diversity (a.k.a., *marked bodies*). This emphasis on visible representations of race/ethnicity seems due, in part, to external differences being the easiest forms of diversity to observe and quantify. Phenotypical markers such as skin color and hair texture can be confirmed at a distance, in a matter of moments, and without the need for personal interaction. Alternative expressions of difference, such as nationality or linguistic disposition, are much more difficult to detect and require a greater investment of both time and energy. As a result, these unseen markers of diversity are commonly devalued within organizational discourses – or else overlooked entirely – resulting in a false sense of attainment among its leadership.

False Attainment

By communicating a fractionated and hierarchal view of diversity, organizational leaders not only tend to perpetuate a limited conception of this term, but also decrease their ability to recognize ways in which this understanding actually renders their own organization less diverse. Although a relatively equal number of men and women attended Central Community, for example, its leadership was entirely male (Jenkins, 2014a). This reality was echoed in the later study Central Faith outside Los Angeles (Santis, Graham, & Jenkins, 2019). Despite such lack of diversity, the leadership staff of both congregations remained convinced of their organizations were in fact diverse. Thus, the inability for Central Community or Central Faith to fully recognize or value alternative expressions of diversity resulted in a false sense of attainment among its organizational leaders.

Taken one step further, Jenkins (2014b, 2014c) and his colleagues (Santis, Graham, & Jenkins, 2019) observed that the diversity paradox allowed leaders to celebrate and promote their organization's one-dimensional view of diversity through promotional materials highlighting race/ethnicity. Ultimately, such a false attainment of diversity can lead to several consequences commonly faced by minority members within organizational contexts – namely that of neglected representation, diminished alternatives, and potential tokenism – each of which serve as the diversity paradox's final three tenants.

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Neglected Representation

As a result of fractionated understanding, visible hierarchy, and false attainment, *the diversity paradox* can also result in neglected representation for certain minority members. Such individuals might be allowed to fully take part in the organization outwardly; however, they are often not considered part of the organization's diversity quotient. As a result, they are not valued or celebrated in the same way as visually diverse members.

Although several minority participants in Jenkins' (2014a, 2014b, 2014c) longitudinal study of Central Community desired to hear more gospel music, for instance, music choice was not an organizational discourse used to measure diversity. DeYmaz (2007), a prominent leader in the Multi-ethnic Church Movement, characterizes variations in musical style as a "hallmark" of healthy intercultural congregations. Yet according to Central Community's leadership, changes in musical rhythm, tempo, song selection, or instrument choice would not affect its level of diversity; thus, grievances against such a "minor" detail as music were neglected by leaders and other members as merely personal preference. At other times, these grievances were seen as something worse: grumbles of discontent, and an affront to the organization's superordinate goal of creating a diverse organization (see Driskill & Jenkins, 2019).

Santis, Graham, and Jenkins' (2019) observations within Central Faith found similar instances of neglected representation, as leaders overlooked calls for alternative approaches to time management by adhering to a strictly monochronic understanding. Rooted in Western society and stemming from the Industrial Revolution, a *monochronic* view of time is defined by precise and regimented scheduling. By dividing time into precise units, it becomes a tangible commodity that can be "spent" or even "wasted," hence, the adage "time is money." In contrast, a *polychronic* view of time is less rigid and more fluid. It focuses on relationships over scheduling, and is largely associated with Asian, Arabic, African, and Latin American cultures (Cohen, 2004).

Because of Central Faith's adherence to a monochronic view of time, Santis, Graham, and Jenkins (2019) found congregational members were pressured to arrive on time for church related events – especially Sunday morning services. This expectation was evidenced by a digital countdown in the sanctuary used to mark the start of each service, the repeated suggestion by organizational leaders to arrive on time, and even the strategic use of musical guests to encourage punctuality. In the end, such a narrow focus on their monochronic view of time management inhibited congregational leaders from recognizing alternative possibilities of neglected representation – namely, alternative approaches to time management.

Diminished Alternatives

Because of *the diversity paradox*'s tendency to devalue and neglect unseen markers of difference, certain minority members are often unable to express their diverse views and approaches to organizational life. Hence, the organizational emphasis Central Community and Central Faith placing on visual and physical representations of race/ethnicity not only devalued alternative understandings of difference, but also devalued alternative ways of *being* (Jenkins, 2014a). Specifically, the value these organizational leaders placed upon visual representations of race/ethnicity devalued representations of female leadership, sexual orientation, able-bodiedness, nationality and linguistic disposition, as well as age, marital status, economic income, education level, and political affiliation.

On an organizational level, other potential examples of diminished alternatives include white normative approaches to service structure and choice of sermon topics. African American and Hispanic/Latino

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church services, for example, are usually longer in length than white church services, lasting as long as four hours (Nelson, 2005). In contrast, church services with predominately white members average a mere 65 minutes in length. In addition, African American and Hispanic/Latino church services typically focus the majority of its time on communal singing and dancing; white church services typically reserve a majority of Sunday morning for the pastor's sermon (Thumma, 2007). The choice of sermon topics also differs between predominately African American and predominately white churches. Stemming from the African slave trade and rooted in the Biblical account of Moses leading his people from bondage, African American congregations generally view salvation as the deliverance from present-day hardships and oppression: racism, financial inequality, institutional oppression, etc. Due to its emphasis on social and religious collectivism, Hispanic/Latino churches share a similar focus on the here and now. Conversely, white congregations generally view salvation as the deliverance from eternal damnation, focusing upon its spiritual and enduring dimensions in the afterlife, rather than its physical and temporal implications (Pinn, 2006).

Despite each of these potential alternatives, Jenkins (2014a, 2014b) and his colleagues (Santis, Graham, & Jenkins, 2019) found congregational discourses to be decidedly white in their approach to church processes and practices. Each service rarely lasted longer than 60 minutes. Services were also organized around the lead pastor's weekly sermon, and although the churches routinely focused on present day hardships and oppression within their local communities, organizational discourses still framed conceptions of salvation in strictly spiritual terms.

Potential Tokenism

Finally, via neglected representation and diminished alternatives, *the diversity paradox* reveals a potential danger for intercultural organizations to consign minority members to that of token status. First defined by Kanter (1977) during her study of gender representation in the workplace, *tokenism* is a perfunctory gesture toward the inclusion of minorities within an otherwise majority group or organization. Such inclusion is typically used to create an artificial façade of diversity, while averting any potential accusations of discrimination (see also Kelly, 2007).

Kanter (1993) divides the process of tokenism into three categories: *heightened visibility, assimilation*, and *exclusion*. Token individuals are often appointed to highly visible roles within an organization, yet are granted limited influence or capacity for organizational change. Due to such heightened visibility, tokens commonly experience an increased level of pressure and expectation placed upon their personal performance. Meanwhile, the uniqueness of token individuals is often overlooked by those within the dominant group, resulting in their assimilation into one collectively inferior grouping, characterized by erroneous and exaggerated stereotypes. Tokens often accept these flawed stereotypes for fear of exclusion, yet feelings of isolation and segregation are still commonplace among token individuals.

Consistent with Kanter's (1977, 1993) characterization, *the diversity paradox* reveals a risk for tokenism within intercultural contexts because of the possibility for organizational discourses to become focused upon one specific (and visibly apparent) view of diversity. For this reason, the mere presence of organizational members whom fulfill that view could be interpreted as enough to "satisfy" an organization's diversity quotient. Furthermore, these members run the risk of being made highly visible within the organization, while simultaneously granting those same members limited influence or capacity for organizational change.

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Understood in yet another way, *the diversity paradox* also reveals the potential for the phenomenon of *attributional tokenism*. That is, a garish emphasis placed upon one particular trait of an organization's culture, norms or practices that promotes a desired image or appearance, while overlooking cultural norms and practices to the contrary. As a theoretical extension of tokenism, attributional tokenism does not grant any particular person or persons that of token status, but rather a particular organizational feature or characteristic.

Attributional tokenism is not limited to the notion of diversity, nor is it limited to intercultural contexts. Rather, this concept can be recontextualized to any number of organizational settings. It can pertain to any organizational quality or idiosyncrasy of an ambiguous and indefinite nature. If an organization seeks to appear "innovative," for instance, leaders and members might emphasize one inventive feature of the organization (e.g., its dynamic office design), while deemphasizing a multitude of other organizational features that remain utterly conventional (e.g., its dress code, salary schedule, hiring process, promotion procedures, management structure, advertising and growth strategies, etc.). Similarly, if an organization seeks to be perceived as "desirable," it might emphasize its high number of employee applicants, while deemphasizing its exorbitant rate of employee complaints or turnover; if an organization seeks to be perceived as "youthful," it might emphasize the young age of its CEO, while deemphasizing the elevated age of its managers and employees; and so on.

The act of attributional tokenism is not inherently negative. It could be argued that *branding*, which has become a buzzword in personal and organizational development, is a form of attributional tokenism (see Lair, Sullivan, & Cheney, 2005). Howard Schultz, for instance, highlights the specific value of *brand awareness* (i.e., the ability for a consumer to recognize a brand under differing conditions) and *attitude branding* (i.e., the ability for a brand to evoke a particular emotion or sentiment). His observations also stress the ubiquitous nature of branding in contemporary society, as well as its ability to influence everything from fitness to coffee (Daye, 2006, par. 1). During Jenkins' (2013, 2014a, 2014b, 2014c; see also Jenkins & Dillon, 2012) and his colleagues' (Santis, Graham, & Jenkins, 2019) longitudinal studies of intercultural congregations in Florida and California, however, the organizations sought to be perceived (a.k.a., branded) as "diverse." As a result, organizational leaders were able to emphasize the racial/ethnic composition of their congregations, while deemphasizing their organizations' absence of female leadership, as well as its complete lack of LGBT, disabled, international, and non-English speaking congregational members. Such a discursive move served to create a façade of increased diversity via attributional tokenism.

SOLUTIONS AND RECOMMENDATIONS

The diversity paradox highlights a need for intercultural leaders and members to recognize alternative expressions of difference. A broadened view of diversity would positively correlate with organizational leaders' and members' ability to express their unique views, perspectives, and approaches. Through a broadened understanding of diversity's potential meaning, additional alternatives for organizational life would also emerge, decreasing the probability of personal or attributional tokenism. A broadened understanding of diversity alone is not enough for lasting change, however, as the socially constructed categories of difference are ever-changing. For that reason, organizational leaders and members must also remain continuously receptive to understandings of diversity beyond those presently held by the organization and society at large. Rather than merely adopting a broadened view of diverse communities,

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intercultural organizations must employ an *ever-broadening* definition. In other words, an organizational view of what it means to be diverse must be viewed as ephemeral: fluid and ever-changing. Any formal or informal classification of terms like "diversity" must remain living documents, open to perpetual change.

In order to actualize such ever-broadening definitions, it is essential that organizational leaders and members adopt reflexive mechanisms of change (see Senge, 2006). *Reflexivity* is defined as the recursive turning-back of personal experience upon itself. Soros (1994) further characterizes the concept of reflexivity as a two-way feedback mechanism that helps shape the participants' thinking; in turn, the participants' thinking helps shape reality in a recurring loop (p. 2). Such a view of reflexivity draws obvious comparisons to the *observer effect* (Furuta, 2012) and *uncertainty principle* (Heisenberg, 1930), which illustrate the way certain measurements cannot be made without affecting the very object in question. As a theoretical physicist, however, Heisenberg dealt with external observations of complementary variables, while reflexivity deals with the role of cognition as a generative tool for observable phenomena.

Reflexivity is also embedded within – while drawing upon – our current perceptions of reality. In this sense, reflexivity is both a result and limitation of our communicative encounters with others: "Reflective understanding is an integrating process that draws upon understandings gained from the body's interaction with the world and from the accumulated wisdom of the culture" (Polkinghorne, 2004, p. 151). A researcher can only be understood in terms of those whom s/he seeks to research; those s/he seeks to research can only be understood in terms of the researcher. It is only together that we mutually specify our own conditions of existence, hence, reflexivity is "relational-in-a-context" (Steier, 1995, p. 64).

Due to its pensive and recursive nature, reflexivity is often illustrated as a set of mirrors doubling back on themselves. Like the Place of Versailles' great Hall of Mirrors, this recursive aspect of reflexivity can be visualized as an infinite set of loops that fail to reflect or generate anything beyond itself. Such recursivity has prompted certain scholars to disparage reflexivity for its narcissistic nature (e.g., Steier, 1995). Other scholars, however, have venerated reflexivity for its ability to challenge patriarchal knowledge production (Haraway, 1991) and its promise for social change (McLafferty, 1995). Pels (2000) further addresses this issue by offering a potential solution for contemporary scholars: "I…defend a view of reflexivity which I call 'one step up.' … It ties just one loop, adds one level of self-exemplification, in order to bend the rectilinear story into a curvilinear or elliptical one" (p. 3).

By nurturing this reflexive, "one step up" culture among its leaders and members, intercultural organizations can learn to reflect-in-action upon organizational practices and structures. In the end, rather than merely addressing the organizational issues highlighted by *the diversity paradox*, such reflexive mechanisms of change will ultimately provide organizational leaders and members the ability to address their own faulty assumptions about the organization's current level of diversity – or lack thereof.

FUTURE RESEARCH DIRECTIONS

Continued research on intercultural organizations is severely needed – particularly within racially/ethnically diverse congregations. The need for such research will only increase in places like the United States as its racial composition continues to diversify (US Census Bureau, 2008). Suggestions for future research include ethnographic studies of other racially/ethnically diverse congregations beyond Florida and California in order to identify additional manifestations of *the diversity paradox* – added ways in which an organizational emphasis on one potential understanding of diversity (e.g., age, gender, nationality, sexual-orientation, etc.) serves to deemphasize alternative expressions of difference.

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Given that less than 8% of American congregations are intercultural (Emerson, 2008), future research should also extend this study's focus to monocultural congregations. Rather than focusing on a racial/ethnic outliers like Central Community and Central Faith, organizational communication studies are needed to examine how religious leaders and members constitute community within homogenous populations. Similarly, future organizational studies should explore faith traditions beyond Christianity alone. Indeed, nearly two-thirds of the world do not identify with the Christian religion. An estimated 21% of the world's population self-identify with Islam, 16% self-identify as "nonreligious," 14% Hinduism, 6% Buddhism, and 6% Taoism or Confucianism (Central Intelligence Agency, 2013). In light of these numbers, and fact that Islam is also the world's fastest growing religion (Zein, 2007), it is becoming increasing vital for organizational communication researchers to examine the organizational complexities surrounding race/ethnicity within other religions as well.

Additional areas for research involve the intersection of community and race/ethnicity within secular contexts. Even though the majority of Americans attend church at least once per year and more than one hundred million Americans are involved in church to some degree (Emerson, 2008), these numbers indicate that approximately two hundred million Americans are *not* involved in a religious or faith-based organization. Consequently, it is vital to explore the way community is co-constructed and maintained by racially/ethnically diverse populations within nonreligious milieu: health settings, educational institutions, governmental organizations, etc. Research within these organizations is needed to identify manifestations of *the diversity paradox* within secular contexts as well.

CONCLUSION

The diversity paradox reveals the propensity for intercultural organizations to promote one potential understanding of diversity in a way that diminishes alternative possibilities of organizational life for certain minority members. This paradox has been shown to occur in six interrelated ways. *Fractionated understanding* refers to the way organizational leaders make sense of a potentially overwhelming topic by subdividing the notion of diversity it into smaller parts and focusing upon only one potential understanding. *Visible hierarchy* refers to the increased value organizational leaders routinely place upon certain subdivisions of diversity, namely physical and visible representations of racial/ethnic difference. *False attainment* refers to the way in which leaders can become self-convinced of their organization's diversity – because of the increased value they place upon their own subdivided understanding – without ever considering the multitude of ways in which it is not. *Neglected representation* refers to the way certain minority members can be overlooked in regard to an intercultural organization's diversity quotient. *Diminished alternatives* refers to the way these members often feel unable to express their diverse views and approaches to organizational life, and *potential tokenism* refers to the risk of appointing minority members to highly visible roles within an intercultural organization in effort to create an artificial façade of diversity.

In light of the racial/ethnic inequalities that continue plague our world, it is vital that organizational leaders and members continue in their pursuit of building culturally diverse communities. Considering the ambiguous nature of diversity, however, it is equally imperative for leaders and members to remain mindful of the ways in which they seek to build those communities. Thus, *the diversity paradox* offers a theoretical understanding for how organizations can serve to stem racial/ethnic inequality in our world writ large.

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KEY TERMS AND DEFINITIONS

Attributional Tokenism: A garish emphasis upon one particular trait of an organization's culture, norms, or practices that promotes a desired image or appearance, while overlooking cultural norms and practices to the contrary; a theoretical extension of *tokenism*.

Fractionation: The separation of isotopes into smaller quantities.

Marked Bodies: Physical and/or visually apparent representations of difference.

Reflexivity: The recursive turning-back of personal experience upon itself; the process of thinking about thinking.

Tokenism: A perfunctory gesture toward the inclusion of minorities in a group or organization.

White Normativity: A view of whiteness as the default culture in society; the unspoken norm.

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Chapter 7
Workforce Diversity:
Gaining the Competitive Advantage

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ABSTRACT

The growing acceptance of marrying across racial and ethnic lines (as reflected in US census statistics) together with the growth of demographic changes across workplaces is fueling fears among some who see their culture being threatened and react by engaging in overt discrimination. One concern regards employers having access to databases containing talented individuals who are ready to work. Their choices hinge on the abilities required to further their enterprise. Paradoxically, a business's culture's greatest strength could be its greatest weakness when not consistent with sound business strategies. Moreover, when such a culture prevents a firm from meeting competitive threats, this can lead to the firm's stagnation and ultimate demise. Diversity has never been thought of as a strategy until now. This chapter explores workforce diversity.

INTRODUCTION

Workplace diversity refers to the similarities and differences among people employed within an organization. Aspects of workplace diversity may include age, race, gender, personality, religion, sexual orientation, and education. When the coal mines closed; when the factory jobs disappeared; when Bessemer Road and Petticoat Lane and other high street businesses began taking down signs and logos; when the population started a steady decline; and when the healthcare industry was on the brink of bankruptcy; the residents of Tottenham, London, England or Hazelton, Pennsylvania, USA flocked downtown for

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their annual Funfest regardless of age, race, age, gender, religion, or education (Norris and Laub, 2018). The Tottenham, London festival brings together a diverse population ranging from African, Americans, Asiatic, Caribbean, European, Hispanic, and many other peoples who claim the British Isles as their home. In Hazelton, Pennsylvania, the festival attracts all those who are fascinated with aspects of American culture including beer, wine, music, and fancy attire (Norris and Laub, 2018).

BACKGROUND INFORMATION

Symbols of the Cities

Each week, in Tottenham City, the Hotspurs Stadium on White Hart Lane hosts live national and European football/soccer matches attended by more than 100,000 fans, with millions more watching the games on television. The crowds include Africans, Asians, Indians, Pakistanis, West Indians, and native Europeans. London demographic data show the presence of minorities in the workplace and in the school system. The demand for healthcare impacts children and adults from all races and ethnic groups.

Today's youth are of a different complexion than the youth of 50 years ago. Norris and Laub (2018) show that in America, the color of non-Hispanic whites is less than 50% of the youth population in 632 of America's 3,142 counties. Most of these are in southern and coastal states. It implies that employers have a wider selection of talent. Norris and Laub suggested that by 2020, 50.2% of American children will be from today's minority groups. By 2044.5, 50.3% of Americans of all ages will be from those same groups.

Organizational Culture

In Schein (1992), organizational culture encompasses values and behaviors that contribute to the unique social and psychological environment of an organization. According to Needle (2004) organizational culture represents the collective values, beliefs and principles of organizational members and is a product of factors such as history, product, market, technology, strategy, type of employees, management style, and national culture; culture includes the organization's vision, values, norms, systems, symbols, language, assumptions, environment, location, beliefs and habits. In later research, Edgar (2013) asserted that a chronic issue in conceptualizing culture is whether to think of it as a static property of a given organization…its shared customs, beliefs norms and values and tacit assumptions or whether to think of principles as a dynamic human process of constructing shared meaning. Culture creation is one of the unique human characteristics of humans, being based on our capacity to be self-conscious and able to see ourselves and others from each other's points of view. It is this reflexive capacity of humans that makes culture possible. Schein suggested that given these human characteristics, it was then clear that culture was both a process and a state.

In Freiberg and Freiberg (2013), it is suggested that for many years companies have relied on employee surveys and gone are those days. The people doing the job need to be far more than satisfied. They essentially should be enthusiastic about the company. They must to continue to learn and improve their disposition to produce the goods demanded by the customers.

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Flamholtz and Randle state that: A strong culture is that people clearly understand and can articulate. A weak culture is one that employees have difficulty defining, understanding, or explaining. Strong culture is said to exist where staff respond to stimulus because of their alignment to organizational values. Discrimination in the workplace can be viewed as signs of a weak culture where individuals possessing the brashness to effectively work are oppressed because of their race, ethnicity or gender. In such environments, strong cultures help firms to focus on integrating talent to increase productivity.

A Historical Perspective: Black Brown and White

In Conway (2005), most British people of West Indian origin were born in the United Kingdom as opposed to the West Indies themselves. Geographically Jamaica belongs to the group of islands known as the West Indies and include the Dominican Republic, Puerto Rico, Cuba and Haiti. The West Indies are a group of islands in the Caribbean called the Greater Antilles. Jamaica is the biggest of the islands and the United Kingdom Office for National Statistics estimates that in 2015, some 137,000-people born in Jamaica were resident in the UK. In Clark and Mezzofiore (2018), Jamaicans are said to have come to help rebuild Britain after the devastation of World War Two. They were invited by the UK government to lay roads, drive buses, clean hospitals and nurse the sick. Clark and Mezzofiore suggested that the Jamaican immigrants were known then as the Windrush generation -- the first of their numbers came on the Empire Windrush passenger liner in June 1948 -- they were the first large group of Caribbean migrants to arrive in the UK. The *Windrush* was nicknamed the *Banana* boat because part of its payload were bananas and other fruits from the West Indies. The West Indians came to symbolize the seismic demographic changes that took place in post-war Britain, when hundreds of thousands of people came to the United Kingdom from former British colonies, known as the Commonwealth. According to the National Statistics Office (2018), the number of Jamaican nationals is estimated to be significantly lower, at 49,000 in 2015. Today they are part of the workforce in the United Kingdom and Europe.

In contrast to the US, Africans came as slaves who possessed no assets except their intellect. In Berlin (2004) slavery in the United States was the legal institution of human chattel enslavement, primarily of Africans and African Americans, that existed in the United States of America in the 18th and 19th centuries. Slavery had been practiced in British America from early colonial days, and was legal in all Thirteen Colonies at the time of the Declaration of Independence in 1776.

The Africans enter the new world in captivity. In colonization the institution of slavery was deployed as the workforce to build the colonies. After the Emancipation 1863, the Africans were freed and have been referred to as African -Americans or Blacks (Cromwell, 2014). However, many incidents of racial conflict have been experienced since the Civil Rights 1964 Act such as the Trayvon Benjamin Martin 2012. In Robles (2012), Martin was walking back alone to the house of his father's fiancée after purchasing candy and a soft drink at a nearby convenience store. The neighborhood had suffered several robberies that year. Zimmerman, a member of the community watch, saw Martin and reported him to the Sanford Police as suspicious. Moments later, an altercation between the two individuals took place and Zimmerman fatally shot Martin in the chest.

Robles suggested that Zimmerman who could have been injured during the encounter, claimed self-defense in the confrontation, and was not charged at the time. The police said there was no evidence to refute his claim of self-defense, and that Florida's stand your ground law prohibited law-enforcement officials from arresting or charging him (Robles, 2012).

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WORKFORCE DIVERSITY

Talent Is Unevenly Distributed Within the Population

Sports talent, such as in basketball or football, is unevenly distributed – either in the US or anywhere else. Bell (2017) proposed that diversity in the workplace was increasingly being embraced among US businesses. Recognition that diversity is often a foundation for innovation is gaining momentum among businesses and leaders. Bell (2017) suggested that corporations were recruiting from varied talent pools to attract potential employees from various backgrounds. Advertising showcasing diversity is also on the rise; and employers have included induction and multicultural assimilation in their training and development offerings. These courses help the workforce to transition into a more diversified workplace. On-line courses are very handy and effective in developing the knowledge and skills required in effective organization. The people doing the work can continue to learn any time rather than waiting for classroom course offerings during a semester. Mupepi Sorensen and Tenkasi (2013) argue that different strategy to organizational learning could be focused on improving the workforce's brashness to produce goods to meet demand.

Equal Opportunities Regulations

In the European Union, human rights are protected by various laws. If one's employer is a European public authority, they must follow the principles of the Human Rights Act. The Human Rights Act is based on the European Convention on Human Rights and adds protection for workers' rights and freedoms. In the US, the Civil Rights Act of 1964 frames the workforce rights and the obligation of the employers to protect the interest of employees regardless of race, color, sexual orientation, or creed. In Wright (2005), the Civil Rights Act of 1964 was recognized for being a landmark civil rights and US labor law in the United States that outlaws, discrimination based on race, color, religion, sex, or national origin. It prohibited the application of unequal voter registration requirements; the practice of racial segregation in schools; and the provision of unequal access to employment opportunities and public accommodations.

Discrimination Based on Class Divisions

Fifty years ago, in Washington DC, a historically Black township called Shaw – ten blocks from the White House – was ablaze because of racial tension. As discussed in the *Economist* (April 7-13, 2018), the spark had been lit on April 4th, 1968, by the assassination of Martin Luther King in Memphis, Tennessee. After the murder of the civil rights leader Martin Luther King, riots gripped more than 100 cities throughout the nation. President Lyndon B. Johnson set up the Kerner Commission of Inquiry to investigate the race riots. The inquiry founded that the nation was moving towards two societies—one for the Blacks (in which there was endless poverty and unemployment, because of discrimination), and one for the Whites, an explanatory contrast. Blacks were discriminated against in all facets of life including employment, education, and business. Black women, too, faced their own unique challenges of being denied equal opportunities in the workplace. There are numerous forms of discrimination—and all are forbidden under the umbrella of civil rights legislation. For example, three methods of discrimination (with regards to money lending) are:

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1. **Overt Evidence of Discrimination:** Occurring when a lender blatantly discriminates on a prohibited basis;
2. **Disparate Treatment:** Occurring when there is evidence that a lender treats applicants differently based on one of the prohibited facts; and
3. **Disparate Impact:** Occurring when there is evidence that a lender applies a practice uniformly to all applicants but the practice has a discriminatory effect on a prohibited basis and is not justified by business necessity (Title VII of the Civil Rights Act of 1964).

With respect to disparate treatment, the Policy Statement provides that disparate treatment ranges from overt discrimination to subtler disparities in treatment and, importantly, does not require any demonstration that such treatment was motivated by prejudice or a conscious intention to discriminate against a person beyond the actual difference in treatment itself (Comptroller of Banks, 2010).

Accommodating Diversity

The problems confronting workforces include racism sexism and ethnocentrism. These three are the most powerful forces impacting productivity in organizations. For example, White majority people dominate organizations in North America and Europe as being superior to minority races, women, and other ethnic groups solely because they are White. Culturally they were the first landlords which gave them ample time to create real wealth as compared to the African-Americans who were only freed as slaves in 1863 with no equality in society and employment until Civil Rights Act 1964. This law prohibits unequal application of voter registration requirements, racial segregation in employment or public accommodations. The basis for workforce diversity is language. Accepting diversity means much more than being able to look at another employee whose skin is an unusual color and feeling comfortable with that employee. It can mean accepting people who dress and eat differently. Change will be necessary to the food available in cafeteria.

In the US the workforce can include adherents of the African Traditional Religions, Christians, Muslims, and Jews, among many others. Changes will be needed in conditions of service to enable the Muslims to pray privately, allow the Seventh Day Adventists to work Sunday through Friday, and so forth. Introducing pluralism workshops could be helpful. Mupepi and Mupepi (2016) suggested that items such as job specifications and job descriptions could be used in diversity workshops to emphasize how the job should be done and explain the organizational structure to understand who is who.

Age Discrimination Amidst Shifting Demographics

The Age Discrimination in Employment Act (ADEA) forbids age discrimination against people who are age 40 or older. It does not protect workers under the age of 40; although some states have laws that protect younger workers from age discrimination. It is not illegal for an employer or other covered entity to favor an older worker over a younger one, even if both workers are age 40 or older. Discrimination can occur when the victim and the person who inflicted the discrimination are both over 40 (EUAFR, 2018).

Fernandez (1991) argues that in Europe there is tremendous bias against older workers and that there are few laws to protect them. The key factors influencing demographics in Europe are its aging population and its low birth rate. In 1990 the birth rate among EC countries on average was 1.58. Only Ireland had a rate slightly above 2.1. Fernandez argues that Europeans are aging at a very fast rate compared to

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North Americans or Australians. The US population is aging at a slower rate than other industrialized nations because immigrants gained are much younger. People have been retiring earlier for the past two decades; the average retirement age for men is 62 years. The percentage of workers retiring before age 65 rose from 62 percent in 1978 to 84 percent in 1986. The following are some of the demographics for the older population:

- In 1987, the median age of Americans was 32.7; in the year 2000, it was 36; by 2010, the median age was estimated at 39
- In 2010, 25 percent of the U.S. population was estimated at 55 years' old
- In 1890, only 2 percent of people lived to be 65 years of age; today 65 percent do.
- In 1900, 40 percent of the US population was 17 years of age and under, 3 percent was 65 years of age or older (Fernandez, 1991).

People have been retiring earlier for the past two decades; the average retirement age for men is 62 years. It implies that there will be elderly workers in the workplace in America.

Race/Color Discrimination

Race discrimination involves treating someone (an applicant or an employee) unfavorably because he/she is of a certain race or because of personal characteristics associated with race (such as hair texture, skin color, or certain facial features). Color discrimination involves treating someone unfavorably because of skin color/complexion. Race/color discrimination can also involve treating someone unfavorably because the person is married to (or is associated with) a person of a certain race or color. Discrimination can occur when the victim and the person who inflicted the discrimination are of the same race or color (EUAFR, 2018).

Discrimination and Harassment

In Spencer (2012), pluralism is a term used in philosophy, meaning doctrine of multiplicity, often used in opposition to Monism ("doctrine of unity") and Dualism ("doctrine of duality"). The term has different meanings in metaphysics, ontology, epistemology and logic. Pluralism exists in many workplaces to configure resources to minimize risk. For example, management policies are pluralistic in nature to accommodate the practices and procedures necessary to create the competitive advantage.

In the United States, the EEOC laws prohibit discrimination and harassment—practices which can include, for example, racial slurs, offensive or derogatory remarks about a person's race or color, or the display of racially-offensive symbols. Although the law doesn't prohibit simple teasing, offhand comments, or isolated incidents that are not very serious, harassment is illegal when it is so frequent or severe that it creates a hostile or offensive work environment or when it results in an adverse employment decision (such as the victim being fired or demoted). The harasser can be the victim's supervisor, a supervisor in another area, a co-worker, or someone who is not an employee of the employer (such as a client or customer).

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Are Women Better Managers Than Men?

As reported in the *Department of Labor Report 2010*, Asian women and men earned more than their White, Black, and Hispanic counterparts did in 2009. Among women, Whites (with weekly earnings of $669) earned 86 percent as much as Asians did ($779); while Blacks ($582) and Hispanics ($509) earned 75 percent and 65 percent as much, respectively. By comparison, White men ($845) earned 89 percent as much as Asian men ($952); Black men ($621) earned 65 percent as much; and Hispanic men ($569), 60 percent as much.

The differences in earnings between that of women and men were widest for Whites and for Asians. White women earned 79 percent as much as their male counterparts did in 2009, while Asian women earned 82 percent as much. By comparison, Hispanic women had earnings that were 90 percent of those of their male counterparts, while Black women earned 94 percent as much as Black men did.

Across the major categories of Blacks Whites and Hispanic ethnicity, women's inflation-adjusted earnings grew significantly from 1979 to 2009. Growth in real earnings for White women, however, has outpaced that of their Black and Hispanic counterparts. Between 1979 and 2009, inflation-adjusted earnings for White women rose by 32 percent; while the growth of earnings among Black and Hispanic women was 25 percent and 18 percent, respectively. In contrast, real earnings for White men edged up by just 3 percent over the 30-year span; those for Black men showed no growth; and Hispanic men's earnings fell by 6 percent (US Department of Labor Report, 2010).

Gender and Jobs

Table 1. Distribution of women in selected science professions

Profession	Percentage of Women
Engineers	15
Physicists	18
Earth scientists	23
Chemists	32
Mathematicians	43
Biological medical scientists	53

Clancy (2018) conducted a longitudinal study in the harassment of women in selected science professions ranging from engineers to medical scientists and found that women accounted for half the United States' college-educated workforce in 2015 but only 29%of the workers in science and engineering occupations. There was rough gender parity in some science and engineering fields, but many remained disproportionately male. The study conducted by Clancy found that:

- Both sexual harassment and sexual assault were reported by more women than men---mirroring the situation in society at large.
- Women's experiences of sexual misconduct during scientific fieldwork were not just quantitatively higher but also qualitatively worse than men's. Women victims were more often targeted by

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perpetrators above them in the hierarchy and felt they could not fight back or say so. Few individuals had any awareness of a sexual harassment policy or reporting mechanism; even fewer dared report their experiences.

- Scientists who are harassed face significant career consequences, ranging from having to make lateral career moves to not feeling safe enough to attend professional events…or even stay in the field.

The Story Is the Same

Clancy (2018) argued that too often the story was the same: a man sexually harasses a woman, the woman reports it, and she gets told that's just how it is. There are variations on this theme: women harassing women, people harassing those they don't think conform to their gender well enough, women of color receiving a toxic blend of racial and gender harassment. Clancy's research found that the following cases resulted in dismissal of the offenders:

Astronomer at the University of Berkeley California after investigations were concluded resigned in 2015. The astronomer for a decade was harassing women students. In another case, Paleoanthropologist resigned from the American Museum of Natural History in 2016 for admitting to sexual misconduct of women for many years.

The LGBT Community's Impact on Urban Business

Hofstede (1992) viewed gender differences as being cultural differences and argued that these impact roles in a group. Gender roles continue to change rapidly in most progressive countries around the world. In Raley and Lucas (2006), the LGBT activists and sociologists view LGBT community-building as a counterbalance to heterosexism, homophobia, biphobia, transphobia, sexualism, and conformist pressures that exist in the larger society. The issue of sexual orientation is an emotionally charged one; it arouses feelings like, yet very different from, those aroused by other diversity issues. Mupepi, Essila, Opoku, Mensah, and Mupepi (2018) consider sexual orientation as being a phenomenon present in all races and ethnic groups in the world, not just the United States. The discussion seeks to contrast the leadership of men, women, or those of a chosen sexual orientation, as an antecedent to the creation of situational management practices. An example of situational management is drawn from urban geography where astute leadership welcomes people of different sexual orientations bringing their intellectual capital and settling in multicultural populations such as those of San Francisco, US or London, England.

In Mupepi et al (2018), the out-of-closet practice and discussion of gender identity's underlying relation to sexual orientation is related to employers' appreciation of the paradigm shift towards embracing talent and recognizing the practicality of hiring talented people (regardless of their gender identity) in advancing organizational effectiveness and the 'bottom line' results in a successful enterprise. The practice of gender underlies sexual orientation. The discussion progresses the notion of accepting the sexual identity of men and women who choose to progress their careers. Emotional intelligence draws managerial appreciation of such inclusion's impact on managerial controls and performance. Mupepi et al. assert that top managerial positions in enterprises have been regarded as being male or female enclaves in many cultures around the globe. The trend towards reflect gender as a possible social construct continues to increase in enterprises that value diversity. Change management technology is examined to understand

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how entrepreneurship that is exercised by women (as compared to men) can impact profitability; and to comprehend whether there are any traits attributed to any specific gender. The perspectives are applied to model an organization acquiescent to the possibility of increasing productivity in a variety of settings.

Are Gay Business People Better Entrepreneurs?

When Joel Simkhai came out of the closet at age 18, he was worried about what kind of professional future he could have as an openly gay man. "One of my problems was I thought I couldn't be as successful," Simkhai says. "That's partially because I didn't have any gay role models who were very successful and in high-profile jobs" (Lapowsky, 2018). Now, as founder and CEO of the location-based gay social network, Grindr, which has more than 4 million users in 192 countries, Simkhai has become the very example of success that he says he never had. Maclean adds: "The fact is: Sexuality remains a sensitive subject in big corporate environments, especially among C-suite executives." Recently, the *Wall Street Journal* reported that there's not even a single openly gay CEO on the Fortune 1000 list. Even those who are widely reported to be gay, including Apple's CEO Tim Cook, have never publicly admitted it—a phenomenon often referred to as "the glass closet" (Lapowsky, 2018). Faced with so much secrecy, it comes as no surprise that promising gay business leaders are finding entrepreneurship a comparatively more attractive option. Additionally, some research indicates that openly gay people might even be better suited to the job (Lapowsky, 2018).

The Hofstede model highlights three elements of diversity:

1. The first element is the presence of a set of beliefs, values, and symbols which constitute cultural components shared by an identifiable group of people.
2. The second element is the presence of an individuated culture that values individual needs and goals more than group needs and goals.
3. The third element is the presence of a collectivist culture that values group needs and goals more than individual needs and goals

What Are the Characteristics of a Successful Diverse Enterprise?

Researchers such as Kohler (1929), Von Bertalanffy (1950), Lewin (1951), and – much later – Mupepi, Tenkasi, and Sorensen (2013), suggest that nothing has more impact on successful operations than a multi-talented diverse team. Kohler (1929) made it possible to examine diversity in a group and renamed it the "holistic system"—implying the deployment of talent, technology, and explicit practices to increase productivity. In today's modern production systems, a holistic technology is an approach to IT management that is concerned with viewing and treating a complex computer system as a single entity. It embraces the talent employed to play a significant part in increasing output. In Von Bertalanffy (1950), a feature common to all living systems, including diverse groups, is asserted to be the feature of complexity. Many factors combine to produce one outcome. For example, continuous learning, improvement, assessment, and evaluation can be combined to ascertain the configurations necessary to increase output. A related principle characteristic of groups is that there is usually more than one appropriate way to reach a goal.

Spencer (2012) argued that pluralism was the multiplicity of metaphysical models of the structure and content of reality, both as it appears and as socially constructed logic dictated that it might be.

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In Mupepi, Tenkasi, and Sorensen (2013), systems such as diverse groups are viewed as being dynamic processes with inherent moments of stability and change. A living system's primary objective is survival; but at some point, stability can be impossible or difficult—leading to the system's demise. Mupepi, Tenkasi, and Sorensen (2013) propound that much of the work in corporate organizations is done by small, interlocking, diverse groups representing a series of interconnected ideas.

Mupepi, Tenkasi, and Sorensen (2013) argue that the links can also be viewed as sociograms linked by stakeholders whose safeties are associated with profit maximization. For example, the management is depicted as a self-management work team made up specialists from a diverse background intent on looking after the interests of stakeholders. Other teams, such as production or sales teams, ensure that the organization produces the goods and services demanded by customers.

Multiple Languages

The British Council (2018) is an international organization focused on promoting the many facets of British culture such as the language, sports, or democratic governance of the British Isles. It implies that multiculturalism in Britain means understanding English and other languages spoken in the British Isles (see Figure 4). A great deal of ethnocentrism is centered around language. Language issues are becoming a considerable source of conflict and inefficiency in the increasingly diverse workforce throughout the world. According to Mupepi and Mupepi (2015), language makes it easy to socially construct the existence of an enterprise. Language is at the heart of any business and it makes possible the abstractions that govern people's behavior and their beliefs values and attitudes and this makes business possible within a culture. To go global implies to be able to find mutual understanding of what those abstractions mean in other languages and other cultures. Mupepi and Mupepi (2015) asserted that the as the workforce grows it will mean more people will be speaking English as a second language.

The Gaelic and Welsh languages have radio and television channels of their own audiences and listeners throughout Europe. Sports such as cricket, rugby, soccer, and tennis are pervasive on television and radio and are broadcasted in many languages such as West Indian Australian, South African, or Zimbabwean versions of the English language. This demonstrates multiculturalism, as does the diversity of places where the 4'clock (BMT) tea represents a ritual where artefacts of teapots and kettles are used to boil Earl Grey Tanganda or Lipton tea leaves. The brew has specially associated cutlery comprising tea strainers, erns, cups, sauces, teaspoons, and sugar basins – and even knitted teapot covers to keep the brew hot. The inclusion of hot cross buns or scones with butter and marmalade spread characterizes the ritual. Quintessentially British culture is a unique culture shared by many in what constitutes a fluid British Empire. For example, manufacturers of marmalade jam have not shifted drastically away from the original Paddington recipes because the traditional recipes make sense in terms of sales. Likewise, beer, tea, and coffee beverage sales notably increase during winter and during sports games.

On its 2018 website, the British Council has a brochure in which it gives voice to its position that multiculturalism in the workplace involves more than just talking in different languages. It includes the need for managers to appreciate all their customers—people who are willing to buy goods and services produced by the business. Multiculturalism means that the companies must create databases that can be exploited to increase productivity. The databases can show consumers' location and race; and the company's share of the potential market.

The databases can be utilized in creating targeted adverts for television; or for creating huge billboards on the freeways or banners/posters for display during live sports games such as for soccer matches at

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White Hart Lane or for rugby in Arms Park Cardiff. Such advertisements can result in an upward surge in sales during a given period.

It is important to articulate that corporations rooted in the British Isles do business locally as well as globally—and that, as such, the leaders of these entities must embrace multiculturalism from all angles. Like culture itself, multiculturalism comes from many different people and can be practiced in many ways.

Metaphors for Multi-Vocal Populations Living Together

In Bell (2017), race and ethnicity are viewed as different voices representing individuals and groups in a diversified workforce –all of whom must be heard. Bell suggest that changing demographics and changing views compel organizations to appreciate diversity when making efforts to increase work output. Diversity has its roots from creation, as exemplified in the building of the Tower of Babel. The story of Babel has a common interpretation in our collective minds as being mankind's first defeat in attempting to cope with a plurality of languages. Ever since the building of this divine construction ended in a Babylonian confusion of tongues, polylingualism was viewed as being problematic and something to be prevented. In his book *La Recherche de la Langue Purfaite dans la Culture Europeenne*, Umberto Eco (1992) retraces the search for a universal language throughout European literature and tries to show the implications of this search for how Europe can cope today with its polyglot situation. In Eco's research, the story of the Tower of Babel plays a prominent part. Historically, it is the symbol of the *confusion linguarum*—a symbol of the transition from a universal language used by Adam and Eve to a melting pot of languages. After Babel, the world was doomed to live with linguistic confusion and misunderstanding. Eco questions this interpretation of the Babel story: *Pourquoi interpreter la confusion comme un Malheur?* (p. 24). He tries to show that the solution to this confusion is not to find a universal language but rather to recognize an original polylingualism. The multiplication of languages is socially positive instead of being destructive and conflictual.

An Advantage of Learning Another People's Culture

During WW2, Britain and its allied forces recruited women and men who could understand many languages, especially German and Japanese. The Mormon Church is one of the fastest-growing organizations because it sends thousands of missionaries throughout the world to propagate the Gospel. The missionaries, learning in a custom-built language school in Salt Lake City, are taught about the cultures of the places where they will be deployed. Imparting the knowledge and linguistic skills they need in the field has led to many people in distinct parts of the world embracing the Gospel and becoming baptized.

Barriers to Overcome

In Shafer (2013), barriers to diversity can include: policies and practices perceived as not valuing people over-reliance on technology and process change, under-investing in training and development, emphasizing only on cost and performance measures, restructuring without reasoning, and dragging on diversity. A company can have all the technology available but is people make the difference.

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THE FOCUS OF THIS CHAPTER

The discourse presented here shows that human beings are highly gregarious animals that can reorganize themselves to suit the environment in which they draw the energy needed to grow. The problem of diversity in the workplace is primarily concerned with integration of the talent needed to progress organization. Diversity is a reality in the Western world—and certainly everywhere else. Games people play can be exploited to create customized products and services demanded locally and globally. Organizations must embrace multiculturalism to effectively increase productivity. They must create appropriate databases which can be exploited to increase market share. Multilingualism is an opportunity for different people to communicate effectively in their mother tongues. It is an advantage to learn another people's culture. It is critical to understand the problems confronting women, minorities in the workplace which include racism, sexism, and ethnocentrisms three of the most powerful forces affecting the ability of organizations to have efficient and effective enterprises.

LIMITATIONS

Life under different governments around the world is not necessarily as free as one might experience in the United Kingdom or the United States. In fluidly communist countries, freedom is a scarce commodity – even though the Cold War ended in the 1990 with the end of Michael Gorbachev's administration. In such a climate, not all organizations are ready to expand operations globally – while some are, others are quite satisfied with keeping their enterprise operating locally.

THE WAY FORWARD

High performance standards depend on having staff who are proud of the company. This is where the interests of the people doing the job comes in. In the end the long- term interests of the shareholders are damaged by giving them superficial short-term priority.

Building an Integrated Diversity Strategy Fit

Anderson and Anderson (2013) proposed that there were two important cornerstones for strategic change and these include understanding the executive's significant role in creating new business. However, announcing about a new business strategy is not enough to accomplish it. It must be executed in a way that delivers its intended business results. Anderson and Anderson posited that the creation of a fitting diversity strategy leaders must comprehend the type and scope of change their business strategy requires. The second point they make is that the mindset of the entire organization needs to be changed. The leadership must attend more thoroughly to the human dynamics at play. The organization's mindset must be shifted to perceive the talent needed to advance the enterprise. The mindset is causative. For example, it is the causal factor of behavior and more importantly business results.

An important and often avoided dimension of organizational life is the diversity of its members. Diversity includes many attributes, characteristics, and identity group memberships such as the following:

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- Gender,
- Sexual orientation,
- Physical ability,
- Race,
- Age,
- Language,
- Nationality, and
- Ethnicity among other dimensions.

These identities add both potential complexity and richness to the organization's work. Ignoring these identities reduces a group's effectiveness—thus creating tensions in communications and reducing access to member resources.

Given their potential value to the organization, diversity awareness models should be explored and implemented to increase productivity. When worked effectively, differences among people 'in the room' can be the substantive basis for an opportunity for profound learning for all present. There are several theories of diversity, including the Dimensions of Diversity or Path to Competencies, which future research could explore.

Flamholtz and Randle (2014) state that: A strong culture is that people clearly understand and can articulate. A weak culture is one that employees have difficulty defining, understanding, or explaining. Strong culture is said to exist where staff respond to stimulus because of their alignment to organizational values. Discrimination in the workplace can be viewed as signs of a weak culture where individuals possessing the brashness to effectively are oppressed because of their race, ethnicity or gender. In such environments, strong cultures help firms to focus on increasing productivity.

The formulation and implementation how human practices and procedures and how a workforce can develop positive attitudes about their co-workers. Racism sexism and ethnocentrism can be nurtured by the entire organizations using the technology of positive scholarship to advance organizational culture.

CONCLUSION

According to population dynamics in the US and UK, future organizations will be more diverse than those of ten years ago. Cultural difference represents a major form of diversity in a group. Groups of the future will continue to be increasingly more multicultural than before. Organizations should view diversity as an opportunity to maximize output by producing goods and services needed by specific consumers in the market.

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KEY TERMS AND DEFINITIONS

Change in Complexion: Change in complexion in humans is the changes in natural color, texture, and appearance of the skin, especially on the face.

Cultural Diversity: Cultural diversity is the quality of diverse or diverse cultures, as opposed to monoculture, the global monoculture, or a homogenization of cultures, akin to cultural decay.

Demographic Changes: Demographics are the quantifiable statistics of a given population. Changes such as the numbers of females or males categorized in age groups characterize the populations of any given geographic region.

Ethnicity: The state of belonging to a social group that has a common national or cultural tradition.

Ethnocentrisms: Cultural ideologies that characterize dominant race men and specific ethnic groups as being inherently superior to minority races, women, and other ethnic groups.

Multiculturalism: The presence of several distinct cultural or ethnic groups within a society or organization.

Polylingualism: Polylingual implies multiculturalism expressed in the ability to use several languages.

Windrush Generation: The West Indians who arrived in the United Kingdom in 1948 to reconstruct war-torn cities and work in the healthcare transportation and hotel and catering industries.

Workforce Diversity: The similarities and differences among people employed within an organization. Aspects of workplace diversity may include age, race, gender, personality, religion, sexual orientation, and education.

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Chapter 8
Diversity Management Interventions for Enhancing Competitive Advantage: A Synthesis of Current Research and Literature

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ABSTRACT

Diversity and diversity management is a new organizational paradigm and a business imperative. We already have a vast and rich literature base on these two. Many and varied empirical findings are also available from earlier qualitative and quantitative research studies. An attempt is made in this chapter (1) to examine various theoretical concepts and constructs used in diversity and diversity management, (2) to come up with a synthesis of management research and current literature on diversity and diversity management, (3) to develop a theoretical framework, and (4) to suggest directions for future research as well. This chapter lists some of the challenges faced by firms, the major issues to be addressed, potential research directions, and themes in the Indian context before finally coming up with a conceptual model detailing the antecedents and consequences of diversity and diversity management.

INTRODUCTION

In the face of the global meltdown, focus has shifted from expansion to consolidation. The organizations have concentrated on quality of hires instead of their number. This has revealed the shortage of talent in many regions. The hunt for talent has transcended the regional and national boundaries. The firms with a multi-racial, multi-ethnic, and multi-cultural work force have to tune themselves to the workforce diversity. They have to galvanize the diverse work force to a cohesive productive force to align with their organizational culture. Astounding progress of internet, coupled with fast communication system

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has brought the world close geographically. Despite geographical proximity, cultures prevalent in various parts of the world with divergence in individual orientation, tastes and preferences, attitudes and philosophies towards life and contrasting life styles have posed serious problems in integration of the varied and different national cultures with one organization culture.

Diversity of workforce means inclusion of people with different human qualities and from different cultural groups. Dimensions of diversity are both primary, such as age, gender, and race, and secondary, such as education, marital status, and income. Acceptance of diversity is becoming important because of socioeconomic changes and the changing workforce. Increasing diversity means that organizations must develop programs to deal with global as well as domestic diversity and with potential conflicts that arise. Two recent approaches to supporting and leveraging the power of diversity are *multicultural teams* and *employee network groups*. Many companies are now finding innovative ways to integrate diversity initiatives into their business. The list of HR initiatives that MNCs can use to manage workplace diversity is quite long and varied and their HR Managers need to understand the phenomenon of diversity and its causes and consequences before they effectively deal with the challenges through different organizational approaches and responses. They are required to create an environment that welcomes and values diverse employees in an effort to enhance the competitiveness of firms.

Effective management of a diverse workforce through appropriate interventions is critical for organizations that seek to obtain, improve, and maintain their competitive advantage. To celebrate diversity is to appreciate and value individual differences. This point became increasingly apparent and was also amply established through various research studies in the last two decades. It is not just a nice idea to focus on diversity and look for more and more ways to make an organization truly inclusive in its character. After all, it pays to make full use of the contributions of all employees. It is also good business sense as it definitely yields a competitive edge through greater overall organizational productivity. Diversity awareness training helps people become aware of their own cultural boundaries and prejudices besides learning to communicate with people from their cultural contexts.

It is no exaggeration to state that diversity has evolved from being *important* and the *correct thing* to do to being the *essential thing* to do as an imperative over the years. Progressive firms think of a company restructuring, an expansion, a merger, a corporate takeover, or any other similar episodic event in very highly businesslike manner. Diversity issues are no exception to this list and are expected to be addressed in the same manner before coming up with realistic action plans and solutions.

Building the business case for diversity in any given company will necessarily vary, but in general it can be stated in two compelling arguments: (i) For both large MNCs and small companies these days, the neighborhood in which they sell is the entire world, so it is essential that their workforces look and think like the world, in all of its ethnic, racial, and behavioral variety and (2) The demographics of almost every nation are changing so dramatically that over the coming decades it will be impossible for employers to fill their ranks with members of the traditional workforce. Diversity and diversity management is a new organizational paradigm. There is already a vast and rich literature base as well as empirical findings that are available from earlier qualitative and quantitative research studies.

In this context, an attempt is made in this Book Chapter (i) to examine various theoretical concepts and constructs used in diversity and diversity management (ii) to come up with a synthesis of management research and current literature on viz., diversity and diversity management, (iii) to develop a theoretical framework, and (iv) to suggest directions for future research as well.

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DIVERSITY: CONCEPT AND MEANING

Diversity refers to differences among members of the group or organization on any characteristic. Diversity offers many benefits and organizations lose no opportunity to invest their resources in taking advantage of them. They do this strategically only to outperform their rivals who may fail to make such wise investments. Translating diversity into positive results requires its managers to focus on building and shaping an organizational culture. It also calls for suitable HR practices, the necessary supporting managerial competencies, and appropriate skills in group processes to derive benefits at the level of the organization, the work group, and the individual.

Today, we are in a position to make a persuasive business case for diversity. Moreover, available research evidence also suggests that there are few direct positive or negative effects of diversity on business performance in terms of productivity, quality of work life, and the bottom line. Some researchers even suggested that a more "nuanced" view of the business case for diversity may be more appropriate. Of late, in Human Resource Management (HRM) domain, diversity has assumed a top priority and a dominant theme for several reasons. They are as follows:

- Globalization of markets for most of the products and services.
- A perceptible shift from primarily manufacturing to a service economy.
- Increasing incidence of Mergers and Acquisitions that demand the synthesis of different corporate cultures.
- Formulation of newer business strategies requiring more teamwork.
- Ever evolving and changing labor market.

Diversity: Some Definitions

Kreitz defined diversity as "any significant difference that distinguishes one individual from another, covering a wide variety of factors that might be obvious to other individuals or hidden under the surface." One perspective argues that diversity results in better group functioning, group cohesion, and also in better team, group, and organizational performance. And then the other perspective argues that diversity results in conflict and collision.

As per Robbins, Judge and Vohra (2013), there are different bases of diversity such as age, sex, race, gender, ethnicity, religion, disability status, sexual orientation. While these demographic characteristics constitute *surface-level* diversity, others like personality, attitudes, and values represent *deep-level* diversity. Diversity is complex as it includes both (i) explicit and observable biographical characteristics and (ii) implicit factors that are within the individuals and not explicitly expressed. Diversity, therefore, is a wide, varied, and a manifold construct because there are different forms of diversity such as (i) Customer diversity, (ii) Supplier diversity, (iii) Diversity in the composition of the Board of Directors (BoD), and also (iv) Workforce diversity. It may be remembered here that diversity in organizations does not always bring about positive outcomes. Researchers have drawn on social categorization theory (Tajfel & Turner) and similarity-attraction paradigm (Byrne) to suggest the negative effect of diversity via such processes as conflict and reduced cohesiveness (as cited in Olsen & Martins, 2012). Hence, diversity has mixed consequences or repercussions in organizational functioning.

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Diversity vs. Concepts of Inclusion and 'Field'

Another construct similar to diversity is *inclusion*. Shore *et al.,* (2011) argue that the construct of inclusion has remained nascent without consensus on the nature of this construct or its theoretical underpinnings. Building on Brewers' Optimal Distinctiveness Theory (ODT), they define inclusion as the degree to which an employee perceives that he or she is an esteemed member of the work group through experiencing treatment that satisfies his or her needs for belongingness and uniqueness. For the distinction between these two, Robertson (2006) suggests that they may not describe separate types of work environment but different approaches to Diversity Management (DM). As a corollary, though diversity and inclusion are used as two distinct concepts, benefits from the two might however be similar.

Diversity and DM draw support from Bourdieu's concept of "field" where fields are "contested terrains" in which actors compete for appropriation of different forms of capital (Tatli & Ozbilgin, 2012). Further, according to them, relating this line of argument of Bourdieuan concept of capitals into the study of workforce diversity is based on the premise that limitations of the dominant *etic* approaches in the current diversity research can be overcome by using the emic approach suggested by Bourdieu. Hence, they propose *emic (ex post)* approach to researching diversity at work than focusing only on pre-established (ex-ante) or *etic approach* to workforce diversity. *Emic* perspective identifies emergent and situational categories of diversity, as embedded in specific time and place. However, there are few research studies which have tried to operationalize diversity using the *emic* approach (Tatli, 2011).

This suggests that situational antecedents to diversity relatively need more exploration than other antecedents. While suggesting different approaches to diversity, Podsiadlowski *et al.,* (2013) contend that diversity strategy, diversity orientation, and diversity perspective are often used synonymously. Moreover, strategic response to diversity can be episodic, freestanding, or systemic (Dass & Parker, 1999) or can range from "not doing anything" to having a full blown diversity strategy that integrates various interventions into an organization-wide general framework (Bhawuk, Podsiadlowski, Graf & Triandis, as cited in Podsiadkiwski, et al., 2013).

DIFFERENT APPROACHES TO DIVERSITY MANAGEMENT IN THEORY AND RESEARCH

As there are different concepts of diversity, so are there different concepts of Diversity Management (DM). DM has been a subject of popular discourse for management practitioners ever since it was started first in 1980s. DM has remained prime agenda in the twenty first century as today's organizations are required to deal with diverse workforce more than ever before. Effective DM allows organizations to get access to the widest possible pool of skills, abilities, and ideas. DM has been defined as "enabling every member of the workforce to perform his or her potential" (R.R. Thomas, as cited in Olsen & Martins, 2012).

Cox defines DM as the sum of organizational practices for managing people to maximize potential advantages and as policies for recruiting and retaining talent from different backgrounds (Cox & Blake, as cited in Podsiadlowski et al., 2013).

Olsen and Martins (2012) defined Diversity Management broadly as "the utilization of Human Resource (HR) Management practices to (1) increase or maintain the variation in human capital on some given dimension(s), and/or (2) ensure that variation in human capital on some given dimension(s) does not hinder the achievement of organizational objectives, and/or (3) ensure that variation in human capital

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on some given dimension(s) facilitates the achievement of organizational objectives." In this definition, though the focus is on demographic characteristics, they are taken as a proxy for other deeper level diversity.

White (as cited in Ollapally & Bhatnagar, 2009) uses a metaphor and defines DM as "creating a level playing field"—an environment where each individual has the same opportunity to score.

Cox and Beale (as cited in Curtis & Dreachslin, 2008) conceptualized DM as a three-stage developmental process: awareness, understanding, and action. They argue that action or behaviors are required to translate awareness to reality ranging from diversity training, education, mentoring, and Organizational Development (OD) activities. DM interventions have been found to affect outcomes at the individual, group, and the organizational level.

Bassett-Jones (2005) defined Diversity Management as "the systematic and planned commitment on the part of organizations to recruit and retain employees with diverse backgrounds and abilities."

Current Corporate Approaches to Diversity

In order to effectively manage workplace diversity, a HR Manager of an MNC needs to change from an ethnocentric view ("our way is the best way") to a culturally relative perspective ("let's take the best of a variety of ways"). This paradigm shift in philosophy has to be very much ingrained in the managerial framework of the HR Manager in his/her managerial and operative functions performed towards the organization's diverse human resources. The role of the HR manager must parallel the needs of the changing situations in businesses. Successful organizations are becoming more adaptable, resilient, quick to change direction, and customer-centric. Currently, MNCs face a three-fold challenge while dealing with workplace diversity.

1. Enable the heterogeneous workforce to work together harmoniously toward their common goals
2. Maximize the contributions of each member of what is in fact a large team. And,
3. Ensure fair treatment for all, irrespective of their background.

Today's MNCs are searching for inclusive practices that go well beyond affirmative action to confront the obstacles that prevent women and minorities from advancing to senior management positions. In addition, to prepare for and respond to an increasingly diverse business climate, managers in most companies are expanding the organization's emphasis on diversity beyond race and gender to consider such factors as ethnicity, age, physical ability, religion, and sexual orientation. Once managers create and define a vision for a diverse workplace, they can analyze and assess the current culture and systems within the organization. Actions to develop an inclusive workplace that values and respects all people include three major steps: (a) building a corporate culture that values diversity; (b) changing structures, policies, and systems to support diversity; and (c) providing diversity awareness training.

The underlying culture of an organization should change or else, all the other efforts to support diversity will fail. Companies are addressing this issue by using surveys, interviews, and focus groups to identify how the cultural values affect other groups. Others can set up structured networks of people of color, women, and other minority groups to explore the issues they face in the workplace and to recommend changes to senior management. Organizations' policies designed to fit the stereotypical male employee should be changed. For example, a good way to revitalize the recruiting process is for the company to examine employee demographics, the composition of the employee pool in the area, and the composition of the customer base before working toward reflecting the same in the latter.

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One of the most successful structures to accomplish elimination of glass ceiling is the mentoring relationship, wherein a mentor, a highly ranking, senior organizational member is committed to providing upward mobility and support to a *protégé's* professional career. Many organizations are struggling with generational diversity, striving to meet the needs of employees at different ages and life cycles. Changing organizational structures and policies is important because it demonstrates a concrete commitment to supporting diversity. If managers talk about the value of diverse workforce but do nothing to ensure that ensure diverse employees have opportunities and support in the workplace, employees are not likely to trust that the company truly values diversity.

Diversity Management as a Pragmatic Business Strategy

Over the past two decades DM has become a major competitive factor for many companies and even something they are proud of. Yet others remain to be convinced. They want the business justification for diversity to be sound and demonstrable. To do that, it's necessary to address at least five major issues. They are: how does diversity (i) help an organization expand into global markets, (ii) help build brand equity, (iii) support the organization's human asset/resource strategies, (iv) build corporate image among our consumers, and (iv) enhance operational efficiency? In an equitable work environment, no member or group of members of an organization should have an undue advantage or unfair disadvantage.

The essence of diversity management is establishment of a heterogeneous employee force and making it to perform to its maximum potential. Any business strategy would become pragmatic only when it meets the needs of the diverse consumer/customer groups by focusing on maximizing the creativity, commitment, and productivity of the employee force. Diversity Management is a pragmatic business strategy that focuses on maximizing the productivity, creativity, and commitment of the workforce while meeting the needs of diverse consumer groups. However, overall challenge is to create a work setting where in everyone would be performing to his full potential in the long-run. It is a situation where all employees would be competing for incentives, rewards, and promotions only on the basis of merit alone. An examination of the factors that have contributed significantly for the effective management and successful performance of companies at once reveals that such organizations do the following much better than the rest. They are as follows:

- They purposefully focus on attracting and brining in the best possible talent.
- They are not interested in just meeting the numerical goals.
- They believe in establishment of mentoring programs among employees of same and different races as well.
- They ensure that management is held accountable for meeting all diversity-related goals.
- They conceptualize, design, and develop career plans for employees as part of their performance reviews.
- They consciously make it a point to promote women and minorities to important and significant decision-making positions in the organizations instead of confining or relegating them to mere staff jobs.
- They even go to the extent of making the composition of the Board of Directors also highly diverse.

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These are all the compelling reasons for making the workforce diverse and managing it. They all represent sound business principles and have the potential to contribute to the shareholder value and make it more and ever increasing.

Diversity and Linking HR Practices to Business Practices

An organization's capacity to learn as to how to manage diversity effectively gets stunted and limited should it fail to link HR practices to business performance. Any company's claims for diversity as a strategic imperative would remain hollow and shallow if it doesn't justify the same through suitable supporting financial investments. There are many factors that affect the relationship between diversity and measurable business outcomes. This is precisely the reason for the difficulty in identifying and establishing a simple and direct cause-effect relationship between these two. Diversity can always be made as an input and a resource for learning, change, and organizational renewal. However, managers attempting it are bound to face challenges and experience difficulties in their efforts in this direction. To surmount these impediments, HR managers need to promote cultures of mutual learning and cooperation among the members of the employee force with the help of enabling management practices. Maximizing the overall returns to shareholders i.e., increases in stock prices as well as in dividends continues to remain the basic objective of profit-making businesses. Company earnings have a direct bearing on this objective. In this context, management has to determine the degree to which diversity interventions, like any other management programs, do impact the bottom line.

In reality, organizations, however, have a tendency to measure the success of such programs not by looking at the bottom line but by watching other indicators. Diversity awareness and implementation initiatives like affirmative action programs definitely entail costs but with *no* or *little* financial benefits to the company that commensurate with the expenditure making the critics to strongly oppose them. For this reason, they can be justified only on moral or philosophical grounds.

A SYNTHESIS OF MANAGEMENT RESEARCH AND CURRENT LITERATURE ON DIVERSITY AND DIVERSITY MANAGEMENT

From the time the concept was popularized, the process of conceptualizing and coming up with a generic model monopolized the interest of scholars for a very long time. Diversity as a concept, by and large, has a strong theoretical root in various related concepts giving different perspectives about it. Diversity and Diversity Management concepts were found to have evolved and expanded overtime. Lorbiecki and Jack (2000) identified four major overlapping turns in ideas of DM labeled as demographic, political, economic, and critical. And each turn represents a shift in the way thinking gets changed about DM. Historical evolution of DM can be traced through the report "Workforce 2000" prepared by Johnson and Packer in 1987. They indicated that by 2000 North American workforce would comprise of African-Americans, Hispanics, Native Americans, women, and other minority groups. Triggered by this news, organizations and academicians started taking note of the changing demographic situation to consider the effect of demographic in the workplace.

Konrad (2003) reviewed six articles on workforce diversity and suggested that diversity in the workforce is an extension of Heider's Balance Theory. He even argued that balancing among conflicting

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parties cannot be attained until the individuals sharing important identity group memberships achieve supportive relationships among themselves.

Resource-based Theory is concerned with performance heterogeneity among organizations based on variety of resources: physical capital, financial capital, human capital, and corporate capital. It is also suggested (Richard, 2000; Richard, Barnett, Dwyer, & Chadwick, 2004) that diversity can be valuable, rare, and inimitable resource that enhances a firm's competitiveness (as cited in Yang & Konrad, 2011). They provided empirical evidence that racial diversity and cultural diversity are positively related with financial performance. It was found that firm with more diversity management practices witnessed less turnover and more innovation. Resource-based Theory is concerned with firms' competitive advantage. So, dynamic DM programs and policies can be a competitive asset for a firm which is difficult to copy and hence ensure sustained competitiveness. Organizations are likely to adopt workforce diversity management practices for social legitimacy and to gain resources needed for survival as per Institutional Theory perspective which is concerned with firms' homogeneity. The theory, in itself, comprises of regulative forces, normative forces, and cognitive forces promoting or ensuring homogeneity and act as antecedents for diversity and Diversity Management.

Person-Organization Fit Theory is yet another theoretical perspective for diversity. It is concerned with the congruence between individuals' values, beliefs and personal characteristics on one side and those of the organization on the other side. Generally, women and minorities would perceive organizations to be very attractive employers if they provide opportunities and a work environment that is free from discrimination. This feeling is in consonance with the literature available on Person-Organization Fit Theory.

Olsen and Martins (2012) theorized diversity from value perspective. Some organizations treat DM as an instrumental value as it is responsible for achieving favorable business outcomes. It becomes a terminal value for organizations that view diverse workforce itself as an objective and an end result. The value-in-diversity perspective argues that diverse workforce is generally beneficial for business. The benefits include but are not limited to corporate profits and earnings. The dynamics of labor and consumer markets were altering because of demographic changes and this became a crucial argument in favor of diversity programs.

Inclusive philosophy was seen as an attractive alternative to affirmative action initiating the political turn. Affirmative action former was designed as a temporary measure to redress past discrimination and was eventually got replaced by DM. The political interest turned 'economic' through various articles that were published warned organizations that the performance and image of the organization would be in jeopardy if they did not pay immediate attention to manage diversity.

The domain of DM turned critical when problems were encountered in its implementation. For instance, Gilbert, Stead, and Ivancevich (1999) argued that negative perception combined with poor implementation at the organizational level has resulted in more ineffective and unjust society and not due to the goal of affirmative action to ensure equal opportunities for all. They also proposed a Model for effective Diversity Management. They contend that the CEO's initiation of diversity movement and its continuation as a prerequisite for effective DM. They believed that it would finally lead to and result in transformation of HR functions (mentoring, recruitment, friendly policies, diversity councils and more), individual level outcome (integration, organizational attachment, and psychological dissonance), and positive attitudes towards diversity (acceptance, appreciation of differences, and multiculturalism).

This would benefit the organization in terms of better decision making, representation of qualified minorities, retention of qualified minorities, business with diverse and multinational customer base,

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and product line development. It is contended that the above stated benefits would be instrumental in achieving positive organizational outcomes (profit, market share, stock price), and public recognition.

Today, diversity has been conceptualized with different terminologies providing a modified and an expanded view. The expansion was guided more by the need of the time rather than any other thing. The rhetoric of diversity has been shifted from affirmative action to DM. Of late, the focus of DM has been shifted towards inclusion. The aspects of inclusion demand organization to reduce problems associated with demographic diversity and create environment such that individuals from all background are fairly treated, valued, and included in decision-making (Nishii, 2013).

It is the essence of decision making that makes the concept of inclusion totally different in the context of DM. Prior to that, DM was concerned only with treating each employee fairly and equitably by choice rather than compulsion. Inclusion, as a new concept or as an expansion of DM concept, focused on all aspects associated with DM with additional decision-making feature.

Bassett-Jones (2005) in their conceptual analysis included range of factors associated with diversity. This might include a range of differences in ethnicity, nationality, gender, functions, ability, language, religion, lifestyle, tenure, culture, or intellectual capacities.

In its primitive form diversity in the organization was concerned with demographic aspects but globalization and organizational complexities have enhanced the domain of diversity from mere demographic to cultural diversity.

Prasad and Mills (1997) argued that the notion that traditional monoculture organizations cannot function effectively in the context of today's and tomorrow's workforce and has embedded the same within the philosophy of managing diversity.

They broadly conceptualized diversity as a corporate asset that contributes indirectly towards the performance of the organization. The authors viewed that the concept of diversity signifies different things to different groups and individuals within organizations and society. For some, diversity means demographic representation and for others, it may involve overcoming cultural prejudice and instilling new values about difference in the organization.

Kersten (2000) argued that racial equality through DM differs from previous approaches to discrimination in four aspects. First one advocates for systematic transformation of organization by changing the culture in such a way that it becomes an open, welcome, and supportive environment for all people. Second approach is concerned with the presentation of diversity which advocates it as positive and voluntary effort on the part of organization rather than negative and external mandated. As per the third aspect, difference is justified with economic rather than legal arguments. Lastly, diversity is defined in the form of inclusive definition in which any and all differences are considered as part of the diversity project.

Majority of the conceptual work concerning diversity was more towards labeling diversity as necessity rather than choice by generating positive outcomes. Many scholars viewed diversity and its management in the workplace as valuable assets for sustained competitive advantage. Contrary to these conceptualizations, Lorbiecki and Jack (2000) argued that DM initiatives have increased rather than decreased inequalities. They emphasized the need to get involved in more critical and reflexive debate before theorizing diversity in a philosophically and socio-politically different manner.

There isn't one single best way for DM in the workplace. The approach of the organization towards diversity depends on the degree of pressure for diversity, the type of diversity in question, and managerial attitudes. In the larger context, the practice of diversity is more guided by legal compliance rather than choice. So, people from disadvantaged groups act as diversity champions. DM is similar to marketing for

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many organizations. Organizations with global presence tend to promote and preserve diversity within their organizations by appealing towards larger stakeholders including customers.

The general understanding that can be derived from the conceptual review will be that planned and systematic diversity management can yield positive outcomes for the organization. One should not be involved in affirmative action in the name of diversity. Such actions would discourage qualified and capable pool of candidates from entering the organization. DM can also be an indicator of economic condition for organization and to a large extent for the nation. Diversity movement emerged from developed economies and the effort helped them achieve the greater global market share.

India, as a nation is still struggling with the affirmative action perspective of diversity, providing quota for diverse population, and ensuring their representation. In doing so, representation from political to organizational level is more guided by constitutional requirement and such representation was found to be less meaningful.

RESEARCH STUDIES ON GENDER, AGE, AND RACE AS THE BASES OF DIVERSITY

Gender

Among other forms of diversity at the surface level, *gender* has been associated with positive outcomes. If we look into the vast and varied literature that is available on diversity, compared to other bases of diversity, gender as a basis looms large and figures out to be more prominent than others. Gender as a base for diversity has garnered worldwide attention as the number of females joining the workforce has increased significantly in the current era compared to the earlier times. Most researches have examined as to how the inclusion of female workforce in the BOD has resulted in increased financial performance (Campbell & Vera, 2007). However, not all the studies suggest consistent findings with gender and firms' performance. Dwyer, Richard, and Chadwick (2003) posit that the effect of gender diversity at the management level is moderated by a firm's strategic orientation and organizational culture in which it resides. Hence, they suggest that a supportive environment needs to be put in place to reap the benefits of gender diversity.

In similar lines, Smith, Smith, and Verner (2006) found that proportion of women in top management jobs had positive effect on firm's performance while keeping firm's other characteristics constant. Of course, the positive effects, however, depend on the qualification of female top managers. Francoeur, Labelle, and Desgagne (2008) found that firms operating in complex environments generated exceptionally positive and unusually significant returns when they have higher proportion of women officers in the employee force. Though women in positions of directors made no difference but women working in management and governance system generated enough value to keep up with stock market returns.

All the research studies provide consistent findings with regard to effect of gender and performance though these effects cannot be measured in isolation. Hence, possible role of moderating variables must be taken into account.

Cumming, Leung, and Rui (2015) studied the impact of gender diversity and securities fraud and found that the former can reduce the likelihood and severity of fraud.

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Effect of gender diversity was compared across full samples in male-dominated and female dominated industries and found that the presence of women was more effective in reducing frequency and severity of fraud in male dominated industries.

Research on gender has explored whether gender has made progress with regard to management and leadership over a period of time (Broadbridge & Simpson, 2011; Embry, Padgett, & Caldwell, 2008). Braodbridge and Simpson (2011) in their purely conceptual paper discuss how gender over the period of 25 years to the current stage has now reduced to gender denial and gender concealment. This has led to both disadvantage and privilege. Embry, Padgett, and Caldwell (2008) found that men using *gender inconsistent* (feminine) style were evaluated more positively than men using a *gender consistent* style. In addition, a perceived female leader who used a gender-inconsistent (masculine) style was evaluated more positively than a perceived male leader who used a masculine style, but only by female participants.

Another study by Powell, Butterfield, and Parent (2002), suggested that though there has been a significant increase in the proportion of women managers, there was no significant change in the perception of women managers and leaders. A good manager is considered as predominantly masculine. Atwater, Brett, Waldman, DiMare, and Hayden (2004) found that some sub-roles were found to be more masculine while others were found to be more feminine.

Allocating resources, networking, problem-solving delegation, and strategic decision making would be perceived as more masculine, while supporting and consulting others were perceived as more feminine. Additionally, male respondents saw most sub-roles as masculine than female respondents.

Nishii (2013) found that within inclusive climates, interpersonal bias is reduced in a way that gender diversity is associated with lower levels of conflicts. All these research studies on gender and management, or gender and leadership suggest that these are largely influenced by stereotypes or perceptions.

The purpose of postmodernism is to make us aware about the connections among meaning, power and language, and that constructivist view of gender theorizing in contemporary psychology reveals gender as a continuum of psychological differences (Hare-Mustin & Marecek, 1988). Constructivist view challenge an idea of single meaning of reality and concern themselves with the way meaning is represented. Gender has its theoretical root in many other theories. Sex role theory explains gender pattern by appealing to the social expectations that define proper behavior for women and men. This theory has been criticized on the ground of intellectual weakness as it does not consider the issue of power, violence, or material inequality, misses the complexities within masculinity and femininity and that it offers very limited opportunities for change.

Categorical theory treats women and men as pre-formed categories. This approach though it addresses the issue of power, does not consider gender complexities. Feminist Theory has often been critical of naturalistic explanations of sex and sexuality that assume that the meaning of women's social existence can be derived from some fact of their physiology and distinguished sex from gender, feminist theorists have disputed causal explanations that assume that sex dictates or necessitates certain social meanings for women's experience (Butler, 1988). Masculinity refers to male bodies but is not determined by male biology and thus it is perfectly logical to term masculine women.

Masculinity studies view gender as unstable and fluid whereas feminist perspective views gender as a social practice that involves creation, negotiation and maintenance of difference in specific social and institutional context that created ground for conceptualization of gender identities (Broad Bridge & Simpson, 201). Most of the quantitative research approaches to gender and performance have used correlations, descriptive statistics, and regressions to study the impact of gender diversity on organizational

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level outcomes (Dwyer, Richard, and Chadwick, 2003; Smith, Smith, and Verner, 2006; Francoeur, Labelle, & Desgagne, 2008).

Cumming, Leung, and Rui (2015) employed robust measures to study the impact of gender diversity and security fraud. They used control firm approach to create group of control firms (non-fraud firm). They came up with empirical models to test their hypotheses while controlling firms' characteristics like age and governance factors. They took 742 control firms out of a sample of 1484. Logistic regression was employed with two stage estimates of determinants of fraud. The findings were subjected to robustness by bootstrap technique. They also addressed the endogeneity between likelihood of fraud and number of female directors on board.

Age

Apart from gender, age is also one of the demographic measures of diversity. Kunze, Boehm, and Bruch (2011) examined the effect of age diversity and age discrimination climate on performance. They found that age diversity seems to be related to the emergence of an age discrimination climate in the organizations, which negatively impacts the overall performance. Sluiter (2006) argued that in high-demand jobs which can be physical, mental, or psychological in their origin are more likely to overtax the capacities of older workers than those of younger workers. This calls for a shift from 'no diversity thinking' to 'diversity thinking' in the context of deciding about the work ability of ageing workers in high-demand jobs.

Contrary to that Walker (2005) proposed that promoting age diversity and providing an environment in which each individual is able to achieve his or her potential without being disadvantaged by their age should be the policy and that employees should not be discriminated by their age. Limited work on age has contradictory findings which place sufficient doubt over age as probable researchable construct that would be of interest to researcher.

Riach (2009) put forward and interesting argument in regard to considering old workforce as diverse and found that there is difficultly in translating age diversity as an abstract managerial concept into policies and practices. Moreover, particularly age and gender has been taken as control variables in majority of the studies that has diminished its actual relevance as a potential variable of interest. More studies taking age and gender as influential variables in the studies would increase its relevance and expand its domain. The conceptual work on the area of diversity needs to be backed by sufficient empirical studies, mostly quantitative, in order to validate the conceptualization under this theme.

Race

Herring (2009) has identified racial diversity to be associated with increased sales revenue, more customers, greater market share, and greater relative profit. Avery, Mckay, Wilson, and Tonidandel (2007) studied whether racial discrimination is associated with absenteeism. They found that underprivileged group within a given race tends to be more absent than the privileged one. And it was more significant on two occasions: first, when the supervisor is racially similar and second, when diversity has no value in the organization. Paug, Dietz, Brief, and Wiley (2008) found that when few racial minorities live in the community within an organization's periphery, workforce diversity has an impact on employees' diversity climate perceptions. Whenever the share of minorities increased, the workforce diversity loses its significance. Richard (2000) studied the interface between racial diversity and business strategy and found that it is important in determining firm performance measured in three different ways viz.,

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productivity, return on equity, and market performance. Like age and gender, the association of racial diversity has been studied with more of the hard measures of performance than others.

Diversity as the Source of Competitive Advantage: The Empirical Evidence

Bassett-Jones (2005) argued about the two facets of diversity in the workplace. Diversity can be a source of competitive advantage as it promotes creativity and innovation in the workplace. It can also be a cause of misunderstanding, suspicion, and conflict in the workplace that can result in absenteeism, turnover, poor quality, low morale, and loss of competitiveness. A need for diversity arises because of discrimination. If an employee is perceived to be discriminated because of his/her demographic or any other difference in identity, the overall performance of the organization deteriorates. As was found out by one research study, employees who grew up in a favorable culture tend to have a less degree of perceived discrimination and thereby leaving a positive impact on employee outcomes. Further, the effect of perceived discrimination on organizational commitment, job satisfaction, and work tension was moderated by superior culture, salary, and work experience.

In their research study, Ng and Burke (2005) found out diversity management to be important when accepting offers of employment by women and ethnic minorities. In the same study, new immigrants rated organizations with DM initiatives as more attractive as their potential employers.

Nishii and Ozbilgin (2007) identified several outcomes of effective global workforce DM practices. They are: effective global knowledge creation, sharing and dissemination of information, lower level of backlash, more commitment, greater satisfaction, and perceived fairness, improved organizational performance and innovation, and employee engagement.

Nishii (2013) found that relationship and task conflict were significantly lower in gender-diverse groups with high scores on *climate for inclusion* than in diverse groups with lower scores on *climate for inclusion*. Similarly, they also observed that any negative association between relationship conflict and satisfaction disappears when climate for inclusion is high. Herring (2009) identified that gender diversity is associated with increased sales revenue, more customers, and greater relative profits.

Curtis and Dreachslin (2008) discussed that the measurable effectiveness of organizational performance through diversity interventions has not been researched adequately. Moreover, the limited work on this issue lacks rigor as there was a total domination of quasi-experimental designs, qualitative methods, and self-reported data. There is a need to investigate the relationship of DM interventions with various performance indicators in more objective ways rather than through the ongoing subjective ones.

It was evident from literatures that men are most likely to use task-oriented and autocratic style of leadership than women, and women are more likely to use interpersonal and democratic leadership styles than men. Based on this premise, Embry, Padgett, and Caldwell (2008) conducted one study and found out that males using a feminist style of leadership were evaluated positively than males using masculinity style. On the contrary, a female leader using a masculine style was evaluated more positively by female participants when compared to a male leader using a masculine style.

Powell, Butterfield, and Parent (2002) carried out a study and its results indicated that a good manager is one who predominantly possesses masculinity characteristics giving support to the stereotype associated with gender. But some other pieces of evidence suggested that women bring a different set of personal characteristics in the managerial roles than men. This would help in changing the stereotype based on bookkeeping and also the conversion models of stereotype change. In today's competitive era of business, the role of managers has shifted towards good communication, coaching, and people skills

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from the erstwhile competitiveness, aggression, and task orientation. The former is more associated with feminist characteristics. Now, the demand for managers with such characteristics is growing and is becoming instrumental in shifting stereotypical paradigm.

Managerial roles, allocating resources, problem solving, delegating, strategic decision-making, disciplining, and punishing were perceived as more masculine in nature. On the contrary, supporting, mentoring, recognizing and rewarding, communicating, and planning were seen as more feminine in character indicating that management is not entirely a bundle of masculine roles. Francoeur, Labelle, and Sinclair-Desgagne (2008) carried out a research study concerning corporate governance and top management. They found out that organizations with relatively more female officers generate positive and significant much more than normal returns in the complex environments while those with high proportion of females in management and governance systems generate good value to keep up with normal stock market returns.

Cumming, Leung, and Rui (2015) revealed that gender diversity has influence on the effective operation and fraud minimization in the organization. Similarly, women in top positions broaden the talent pool and pave the way for more talented Board. Providing for a diversity of views encourages constructive discussion. Gender diversity also gives rise to more conflict and less trust among Board members, and hence increases scrutiny and less fraud from organizational perspective.

The research work concerning gender and diversity in general is more towards a qualitative inquiry. The limited quantitative work under this domain was more concerned towards objective measures of performance. Subjective measurement of diversity was found to be insufficient as it is still one of the emerging concepts in behavioral sciences domain. Hard measures of performance have been found to be tested with diversity whereas more of the soft measures like the effect of diversity on satisfaction, commitment, engagement, and so forth have not been adequately considered for research work. Further, not much of moderating or mediating tests concerning DM have been performed. This trend provides sufficient doubt over the reliability of diversity as a concept in the organizational setting. Limited empirical work on DM lead us to believe that diversity is more guided by political agenda and interest rather than academic and/or organizational interest.

METHODOLOGICAL APPROACH

Both quantitative and qualitative research has been conducted in the domain of diversity and DM. Yang and Konrad (2011) reviewed relevant extant literatures on antecedents and outcomes of diversity management practices. They developed a research model by applying institutional and resource-based theories. Olsen and Martins (2012) conducted proposition based qualitative inquiry for formulating conceptual framework. Bassett-Jones (2005) came up with a conceptual and discursive paper. Prasad and Mills (1997) research studies were reviewed for a Book Chapter. Kelly and Dobbin (1998) performed exploratory study on the concepts of evolution and dissolution. Gilbert, Stead, and Ivancevich (1999) carried out qualitative narrative study where a model for effective diversity management was proposed.

Likewise, the study conducted by Lorbiecki and Jack (2000) was based on a narrative inquiry. Miller and Rowney (1999) study was exploratory in nature where the extent of adoption and implementation of DM initiatives in organizations was examined. Kersten (2000) performed a critical examination of DM by using Habermas model of dialogue. Nishii and Ozbilgin (2007) study was a paper review with a purpose of formulation of conceptual framework for Global Diversity Management. Also, the study of

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Dass and Parker (1999) was concerned with conceptual review and framework design. Hare-Mustin and Marecek (1988) performed qualitative inquiry on the study of post-modernism approach in gender. The study of Sluiter (2006) and Walker (2005) was a study in the form of conceptual paper. Riach (2009) carried out a conceptual inquiry with in-depth interview as a research tool. Curtis and Dreachslin (2008) carried out integrative literature review.

Curtis and Dreachslin (2008) adopted a unique methodology in this context. They took an integrative approach by means of going through 26 relevant portions from the available literature on diversity intervention programs by means of training, education, mentoring, and organizational development activities. They find that most of those interventions were carried out using experimental, quasi-experimental, case study, descriptive, and developmental methods. Majority of the intervention programs employed quasi-experimental research designs. Pre- and post-test surveys were also carried out among participants who attended diversity course.

Self-reported measures were carried out to assess the change in attitudes of the participants that attended the diversity course. Similar kinds of study designs were adopted for education, mentoring, and OD interventions. Most research on gender and leadership as well as gender and management have taken more of a qualitative approach for studying the progress of the latter over a period of time (Broadbridge & Simpson, 2011).

Embry, Padgett, and Caldwell (2008) have used surveys among undergraduate business students and it is alleged that their sample is not an appropriate one as they do not mention whether the students are working or full time students. If the students are not working, their perception of the leader will be far from reality and may not give the accurate result. The major problem with the methodology is the simulated situation where the leaders and subordinates were fictional characters, which might have led to biased findings and stereotypes. Also, there was no clue over the composition of perceived leaders in terms of male and female. Hence, this study was subjected to a number of methodological lapses and the sample size was also small.

Similar problems in methodology were found in another research study on gender and stereotypes where the sample consisted of undergraduate and part time students (Powell, Butterfield, & Parent, 2002) there by missing the context. Relying on student samples can be taken as drawback for this study as well. Methodology was not rigorous as they carried out mean analysis and basic descriptive one. It lacked robust measures of data analysis. Atwater, Brett, Waldman, Di Mare, and Hayden (2004) used Yukl taxonomy of 14 managerial roles. It used non-parametric binomial tests. Though the results were tested by means of means score, z-tests, and chi-square values, in terms of methodology, they could have employed other rigorous methods than simple descriptive and comparison checks by means of chi-square. Despite the fact that samples drawn were students and 75% of them had supervisory experiences, there is no proper justification for the choice of sample.

Sanchez and Brock (1996) study was cross-sectional in nature with quantitative hierarchal regression analysis and questionnaire as a tool to gather data. The study of Ng and Burke (2005) was hypothesis testing mean significance study. Kunze, Boehm, Bruch (2011) study was cross organizational quantitative study by using SEM as a technique for data analysis.

Herring (2009) study was based on determining racial diversity through racial index of diversity and then performing regression analysis on the data. Avery, Mckay, Wilson, and Tonidandel (2007) dealt with questionnaire survey with hierarchical multiple regression analysis as a technique to analyze data. Richard (2000) carried out logistic regression analysis for the data acquired from secondary sources. Francoeur, Labelle, and Sinclair-Desgagne (2008) performed a model-based multivariate analysis where

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comparison of average monthly returns, average return on equity, and average monthly abnormal returns between high and low representation of women was carried out.

Powell, Butterfield, and Parent (2002) performed quantitative inquiry using chi-square test to determine the difference in samples for different time periods. Cumming, Leung, and Rui (2015) conducted a model-based logistic regression analysis with 'fraud' as a dependent variable and 15 other independent variables. Samples were divided into control group and treatment group for comparison purposes. Atwater, Brett, Waldman, DiMare, and Hayden (2004) used non-parametric binomial test and chi-square test to see the difference in the perceptions of male and female employees about the manager roles. Nishii (2013) performed confirmatory factor analysis on the data and ran SEM program. Paug, Dietz, Brief, and Wiley (2008) performed simple regression analysis.

The research work by Embry, Padgett, and Caldwell (2008) was a quantitative inquiry with business students as respondents among whom 81% were having prior work experiences. The responses from 19% with no work experience couldn't be validated as they were not exposed to the leadership style in organizational settings.

The methodological approach on diversity and diversity management was more inclined towards qualitative inquiry. Various conceptual models on diversity management have been formulated and many of the studies on this domain were guided towards enriching conceptual understanding. Only limited quantitative inquiry to test and validate the proposed conceptual framework was initiated. In the quantitative front, the studies were more focused towards measuring hard performance measures. In majority of the quantitative studies, data were collected from secondary sources and one can witness the use of logistic regression for the data concerning this domain. In many studies, financial models for measuring the effect of one variable on other were presented. This showed that diversity management has been more an area of interest within finance domain rather than that of behavioral science. In order to incorporate diversity within behavior science there is a serious need to conduct more quantitative studies to be able to establish the effect of diversity management on behavioral science variables.

Potential Directions and Research Issues in Indian Context

The issue of diversity is more prominent in Indian society. Diversity is so much into Indian society in the form of gender, ethnicity, religion, and language that the slogan *"unity within diversity*" is being promoted to ensure societal and cultural harmony. Diversity in Indian context is much more a political agenda than an organizational agenda. In this regard, diversity is much more driven by affirmitive action rather than meaningful inclusion. Diversity has been found to be encouraged and promoted especially in the development sectors. Research to explore and identify whether (i) diversity in the development sector is because of the mandatory requirement and is limited to affirmitive inquiry or (ii) is it really following the norms of inclusion in the workforce, can be carried out. The perception of employees from marginalized domains (female, dalits, and religious minorities) can add valuable insights in the diversity movement as it has been practiced by developmental sectors. The probable research issue is: What are the reasons that force the firms to claim that their organization is forcefully or willingly practicing diversity management within the organization?

It is evident from the review of literature that very limited work on examining the impact of demographic variables (age, gender, tenure, and ethnicity) on outcome variables (job satisfaction and organizational commitment) has been performed in the Indian context. In this regard, quantitative inquiry to examine the above mentioned relationship can be carried out. The findings from this study will enrich the domain

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of diversity management and enable organization to formulate diversity strategies on retirement schemes or continuing benefits concerning age and tenure, and formulate selection policies in regard to gender and ethnicity. The research can be carried out for banks and financial institutions because banking sector till date has not been forced to recruit employees on the ground of diversity management. Hence, this sector can carry out diversity management practices as per their requirement based on the findings of this study. The probable research issue is: *Do age, gender, tenure, and ethnicity affect job satisfaction and organizational commitment in Indian Banks and Financial Institutions?*

As there has been not much published work in the area of gender and diversity management in the Indian organizational context, this is a potential research area requiring in depth investigation. The issue of *inclusion* has garnered significant attention starting from government organizations to development agencies. The fact that NGOs have been recruiting employees from marginalized communities and minorities including women suggests that diversity will be more of a rule than exception in the days to come. In this regard, it would be meaningful to explore the perceptions of workforce diversity and inclusion among the employees from the development sector.

A pertinent research question to be raised for seeking a meaningful answer is to come up with a universally acceptable definition for the concept of diversity such that it includes the concept of *inclusion* as well. It is no denying the fact that the number of females joining the workforce especially in the post-economic reforms era in corporate houses continues to witness an upward swing. In this backdrop, it would be meaningful to study if the participation of women in the workforce leads to increased corporate financial performance in general and sectors like banking and insurance in particular that have more women representation compared to other formal sectors.

Diversity, of late, has become a major competitive factor for many companies. However, others are yet to be convinced about it and they want the business justification for diversity and expect it to be sound and demonstrable. To do that, it's necessary to address five *major issues.* They are:

- How does diversity help an organization expand into global markets?
- How can diversity help build brand equity?
- How does diversity support the organization's human asset/resource strategies?
- How does diversity build corporate image among its consumers?
- How does diversity enhance operational efficiency?

In the context of diversity management, some of the *challenges* the firms face are:

- What is the objective of building and managing a diverse workforce?
- Can firms make a persuasive business case for diversity with compelling arguments in their respective contexts?
- What could be the possible direct positive or negative effects of diversity on business performance in terms of productivity, quality of work life, bottom line, etc.?
- How can managers take a more "nuanced" view of the business case for diversity?
- Is there additional information beyond the five issues that we need to feel is necessary to make the business case for diversity?
- What steps can one take as a manager to become more effective in a work environment that is more diverse than ever?
- Does diversity management conflict with maximizing shareholder's value?

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- How can a company come up with a list of suggested actions that managers can take to deal with and manage effectively the multiple and varied changes taking place in the internal organizational environment now and in the future?
- What are the implications of diversity management when it is seen from more closely?

FINDINGS FROM EARLIER RESEARCH STUDIES AND EMPIRICAL EVIDENCE

There is good amount of qualitative and quantitative research on the theme of diversity and Diversity Management. The qualitative research is concerned with defining or operationalizing the construct of diversity, diversity strategy, diversity discourse, and DM practices. Review of available literature shows that single category diversity dominates the multi-category diversity. Also, there is no meta-analysis carried out by considering all aspects of diversity. Meta-analysis on demographic diversity and team performance suggested that specific demographic variables (functional background, organizational tenure, etc.) had small positive relationship with team performance as well as team creativity and innovation (Bell et al., 2011). Literature considering the antecedents and consequences of diversity is also minimal. The focus of most of the studies on diversity has been only at the surface level. Also, vast literature on diversity and DM has focused on the positive outcomes than compared to the negative outcomes. Moreover, research studies have considered diversity as an antecedent in most cases. There is sparse literature on diversity as a moderating variable. In one study, diversity strategy was found to moderate the relationship between racial diversity and organizational performance (Cunningham, 2009).

Diversity Management: Some Practical Examples From Corporate World

Many MNCs are now finding innovative ways to integrate diversity initiatives into their business. These initiatives teach current employees to value differences, direct corporate recruiting efforts, influence supplier decisions, and provide development training for women and minorities. Some managers value diversity and enforce the value in day-to-day decision making. Now organizations recognize that everyone is not the same and that the differences people bring to the workplace are valuable. Rather than expecting all employees to adopt similar attitudes and values, managers are learning that these differences enable their companies to compete globally and to tap into rich sources of new talent. Although diversity in India has been a reality for some time now, genuine efforts to accept and manage diverse people begin in right earnest. Managers must take a proactive approach so that differences are valued and capitalized upon. Diversity will turn into an opportunity and enhance the organization's market presence and market share by prudent and pragmatic management practices.

A number of World famous MNCs like Coca-cola, Xerox, AT&T, Proctor & Gamble, and 3M strongly believe in the positive aspects of diversity and attuned their managers to utilize the diversity to the utmost advantage of their organizations. Experience of these businesses suggests that diverse workforce broadens customer base and helps managing customer service more efficiently and effectively. In fact to be successful, MNCs must continue to look forward to the future, not the past. The CEOs, senior line and HR management, and diversity leaders play a key role in that process. If MNCs are to address the complex issues of child and eldercare, the emerging issues of multiculturalism, tolerance of religious practices, and full inclusion of people with disabilities in the workplace, then diversity professionals must lead from the front. They alone must lead as MNCs cannot get there by themselves. In this context,

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MNCs have developed many HR practices in order to improve the efficacy of the approach they adopt while managing diversity.

CONCLUSION

More Recent Approaches to Diversity Management

- Constitution of employee-initiated and employee-funded *caucus groups* based on the various dimensions of diversity to sponsor activities such as training workshops, conferences, and mentoring programs for their members.
- Designing and keeping in place a *Management Resources Planning*, a company-wide formal succession planning process for identifying, developing, and tracking the flow of women and other disadvantaged groups through the company. This is done to ensure their upward mobility while making the business unit leaders responsible for the process.
- Adopting a *balanced workforce strategy* wherein we set numerical targets, based on employee market demographics that specify the percentages of these diverse groups to be hired and promoted into each major job category. Incentive pay and promotions of managers are to be explicitly tied to their achievement of balanced workforce goals.
- Provision for *work and family programs* to include financial grants, alternative work schedules including job sharing, flextime, and compressed workweeks, and a variety of family friendly benefits.
- Tracking and *monitoring Workforce demographics* at all levels and within all units of the company
- Conducting *Annual Employee Surveys* to include questions that assess satisfaction with all aspects of work life, and analyzing the results to assess whether satisfaction differs by gender or ethnicity.
- Organizing *community outreach and development* and stimulating interest in science and technology among all members of the future workforce and to combat early gender and ethnic occupational stereotyping.

The list of HR initiatives that MNCs are currently using to manage workplace diversity is quite long and varied. Managers need to target specific efforts and set priorities for implementing them. An organization's choice of specific efforts will reflect the nature of diversity that is important for the organization, the goals set, the actions of other organizations in the industry, and so on. The rise in consumerism has led to a management style quite divorced from the traditional paternalistic organization. Even the psychological contract between the employer and employee has changed over the years.

On the other hand, there have been perceptible shifts in the individual perceptions of what the main springs of human actions are and what motivates them at workplace as well as in their personal lives. Both the management and the individual employees need to play a positive role in managing diversity. Any attempt to resist the change that comes with it is only self-defeating and fool hardy. Perceptions have an important role to play in diversity management and the role of Personnel practitioners becomes imperative. Various tools such as brainstorming etc. can be used effectively here. Challenging the deep-rooted stereotypes is the crux of the matter in managing diversity. Collaborative and cooperative workplace behavior, training, communication and other such related practices need to be modulated to achieve management of diversity. The imperativeness to review, measure, and reinforce and the steps

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taken by the organization in this direction on a continuous basis and their importance need not be overemphasized here.

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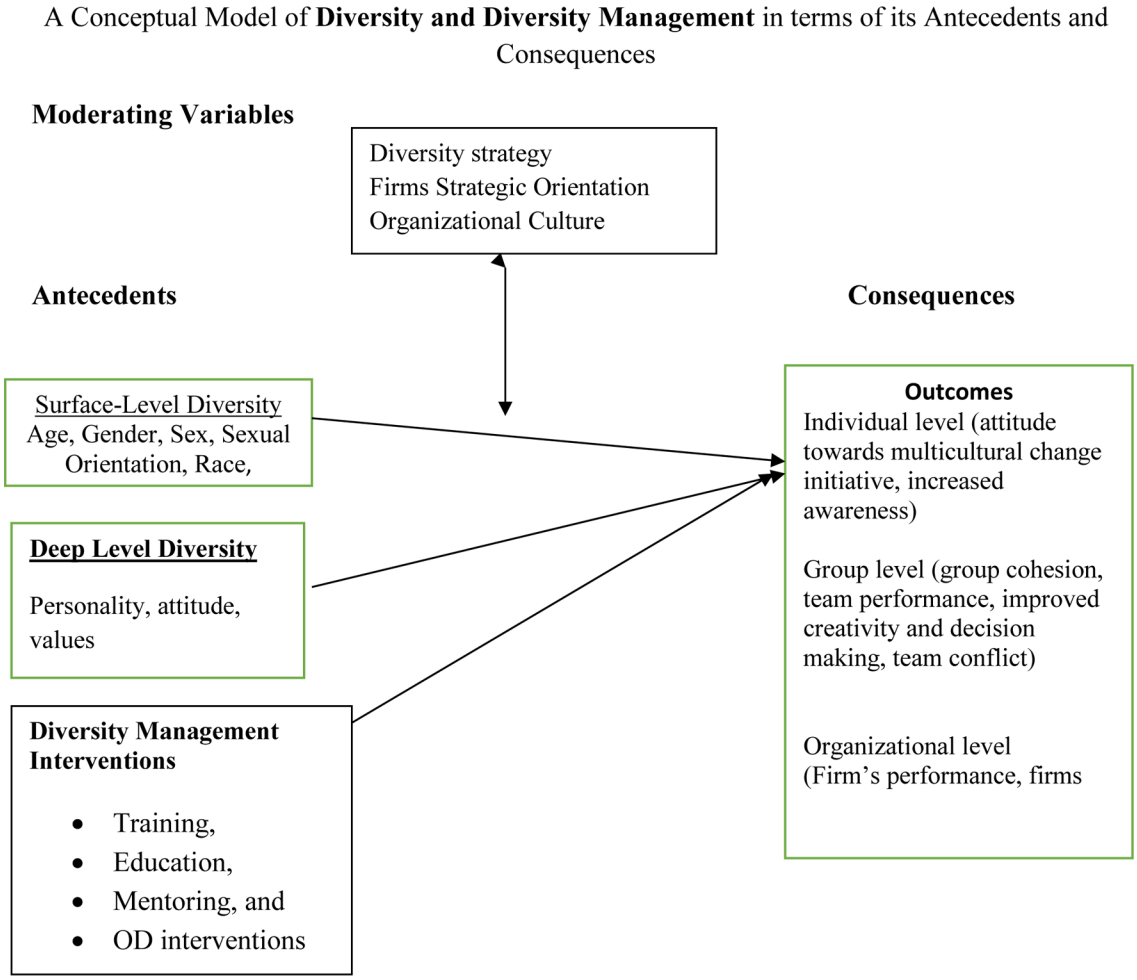
APPENDIX

Figure 1. A Conceptual model of diversity and diversity management in terms of its antecedents and consequences



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Chapter 9
Antecedents and Consequences of Employee Engagement for a Diverse Workforce

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ABSTRACT

In the recent years, employee engagement has become a hot topic of discussion among popular business press and consulting firms. This topic has created interest in various stakeholder groups ranging from scholarly human resource practitioners to policy makers or government agencies. The interest in employee engagement has progressively increased, however, in academic literature: the concept of employee engagement has been studied rarely and comparatively less is known regarding its antecedents and consequences. Recently, a number of researchers have argued that the challenge of engaging the employees is mounting. Although it seems to conceptually overlap with existing constructs, for instance, job involvement, organizational commitment, still some empirical research confirms that engagement is a separate construct. Therefore, this chapter aims (a) to shed some light in this respect by assessing the association between workforce diversity, specifically in terms of their age and employee engagement, and (b) to provide a variety of precursors and outcomes of employee engagement.

INTRODUCTION

The notion of employee engagement is a relatively new one, one that has been heavily marketed by human resource (HR) consulting firms that offer advice on how it can be created and leveraged. (Macey & Schneider, 2008, p. 3)

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In the recent years, employee engagement has become a hot topic of discussion among popular business press and consulting firms (Anaza *et al.*, 2016). This topic has created interest in various stakeholder groups ranging from scholarly (*e.g.* Kahn, 1990; Schaufeli *et al*., 2006, 2002), Human resource practitioners (e.g. Harter *et al.*, 2002; Masson *et al.*, 2008), to policy-makers or government agencies (*e.g.* MacLeod & Clarke 2009). On the one hand, the interest in employee engagement has progressively increased (Anaza *et al.*, 2016), however in academic literature, the concept of employee engagement has been studied rarely and comparatively less is known regarding its antecedents and consequences. Recently, a number of researchers' have argued that the challenge of engaging the employees is mounting (Fleming et al., 2005; May et al., 2004; Pech & Slade, 2006). Although it seeming conceptually overlap with existing constructs for instance job involvement, organizational commitment, still some empirical research confirms that engagement is a separate construct (Hallberg & Schaufeli, 2006).

As per a survey of 656 CEOs hailing from the countries across the globe, employee engagement is fourth significant management challenge, following reducing costs, creating loyal customers (Wah, 1999). Indeed, the Gallup Organization found recently that approximately twenty percent of US employees were disengaged and fifty four percent were successfully impartial regarding their work (Fleming et al., 2005). In addition, study conduct by Gallup and Towers Perrin (Seijts & Crim, 2006) advocates that disengage employee is equally challenging in other countries also. Thus, collectively the influence of these two trends - diversity in workforce and the rising challenge of employee engagement could prove problematical for various employers (Avery *et al.*, 2007).The work force diversity will increase the chances of different diversity present in most of the work settings.

Although researcher has connected work force dissimilarity to various outcomes for instance organizational commitment and intention to stay (Riordan, 2000), still the effect of this divergence on employee engagement is uncertain. Understanding regarding this association is important as (a) meta-analytic evidence and the other findings have revealed employee engagement to predict the key outcomes, for instance customer satisfaction, customer loyalty, employee turnover, productivity, safety, and profitability (Harter *et al.*, 2002; Salanova *et al.*, 2005), and (b) because employee engagement has a direct influence on performance, while the influence of job attitudes for example organizational commitment are indirect in nature (Harrison *et al.*, 2006).

Employee engagement has become a broadly used and famous term (Robinson *et al.*, 2004). However, majority of writings about employee engagement can be found in the practitioner journals, where this concept has its base in practice instead of theory and empirical studies. Robinson *et al.* (2004) noted there has been shockingly little empirical and academic research on a subject that has become so famous. Consequently, employee engagement has the emergence of being something called as, "old wine in a new bottle".

Several definitions have been provided for this concept in the academic literature. Initially, Kahn (1990, p. 694) firstly conceptualized work engagement or personal engagement or employee engagement as "the harnessing of organization members' selves to their work roles; in engagement, people employ and express themselves physically, cognitively, and emotionally during role performances." Rothbard (2001, p. 656) defines engagement as "psychological presence but goes further to state that it involves two critical components: attention and absorption. Attention refers to "cognitive availability and the amount of time one spends thinking about a role" while absorption "means being engrossed in a role and refers to the intensity of one's focus on a role."

Schaufeli *et al.* (2002, p. 74) define engagement "as a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption." They further state that engagement is not a

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momentary and specific state, but rather, it is "a more persistent and pervasive affective-cognitive state that is not focused on any particular object, event, individual, or behavior" (p. 74). *Vigor* refers to "high levels of energy and mental resilience while working, willingness to invest effort in work, and persistence in the face of difficulties"; *dedication* represents "a strong psychological involvement in employees' work combined with a strong identification with their work and encompasses feelings of significance, enthusiasm, inspiration, pride, and challenge"; and *absorption* refers to "being happily engrossed in work, whereby time passes quickly and one has difficulties detaching" (Schaufeli *et al.*, 2002, p. 74).

In the literature in academic, engagement is shown as related to but different from the other constructs of organizational behavior. Such as, Robinson *et al.* (2004, p. 8) state that, "engagement contains many of the elements of both commitment and OCB, but is by no means a perfect match with either. In addition, neither commitment nor OCB reflect sufficiently two aspects of engagement – its two-way nature, and the extent to which engaged employees are expected to have an element of business awareness". To sum up, although the meaning and definition of engagement in the practitioner literature repeatedly overlaps with the other constructs, but in academic literature engagement has been defined as a different and distinctive construct, which include cognitive, behavioral and emotional elements that are related with a persons' role performance.

The main appeal of organization management is based on the fact that employee engagement drives the bottom line outcomes. One of the HR consulting firm (Hewitt Associates LLC, 2005, p. 1) point out that "they have established a conclusive, compelling relationship between engagement and profitability through higher productivity, sales, customer satisfaction, and employee retention.'' According to Macey and Schneider (2008, p. 4), "employee engagement is a desirable condition, has an organizational purpose, and connotes involvement, commitment, passion, enthusiasm, focused effort, and energy, so it has both attitudinal and behavioral components". The antecedents of such behaviors and attitudes are placed in settings under which individual work, and the consequences are reflection to be of value to organization effectiveness (Erickson, 2005).

Therefore, this chapter aims (a) to shed some light in this respect by assessing the association between workforce diversity specifically in terms of their age and employee engagement and (b) to provide a variety of precursors and outcomes of employee engagement.

JOB DEMANDS-RESOURCES MODEL AND EMPLOYEE WORK ENGAGEMENT

Job demands-resources model (JD-R model) is a main theoretical model, which describes the development of employee work engagement. As per Crawford et al. (2010) JD-R model, in a work environment there are two specific working conditions for an employee one is job demands and another is job resources. These two working conditions contribute to either employees' well-being or their stress level, and lead to affect their level of work engagement.

According to Demerouti *et al.* (2001, p. 501), "*Job demands* refers to, "the physical, psychological, social, or organizational aspects of the job that require individuals to exert sustained physical and/or psychological effort and, hence, have certain physiological and/or psychological costs (e.g., exhaustion)". Whereas, according to Schaufeli and Bakker (2004, p. 296) *Job resources* refers to, "those physical, psychological, social, or organizational aspects of the job that either/or (1) reduce job demands and the associated physiological and psychological costs; (2) are functional in achieving work goals; (3) stimulate personal growth, learning and development".

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Therefore, job resources can reduce down the job demands and are equally important in their own right. While job demands can hamper employees' work engagement by rising their stress levels during a health-injury process, and job resources can enhance employees' work engagement by rising their intelligence of well-being via a motivational process (Bakker *et al.*, 2003 and Crawford *et al.*, 2010).

The JD-R model is a conceptual framework, which is used to describe employee engagement in the workplace (Bakker & Demerouti, 2007). This model states that resources are what an organization gives to its employees; these resources may include supervisory support, supervisory feedback and autonomy. These resources are expected to (a) "lessen the strain of the

job's demands and the psychological and physiological costs that a company these arduous demands", (b) "be instrumental in the achievement of employee work objectives", and (c) "motivate and stimulate personal growth, development, and learning" (Demerouti et al., 2001). The model attempts to discuss how resources can be utilized to improve engagement and how the interplay among various resources influences engagement. The model also asserts that organizations' engaged employees will provide customer-oriented behaviors and such behaviors will be reflected in their assessment of service employee performance (Yoon & Suh, 2003; Young et al., 2009).

DISCUSSION OF ANTECEDENTS TO EMPLOYEE ENGAGEMENT

Although there is dearth of empirical research in the literature regarding the factors that can predict the employee engagement, from Kahn's (1990) and Maslach *et al.*'s (2001) model it is possible to identify several possible antecedents. The antecedents might vary for both job and organization engagement as a part of employee engagement. These antecedents consist of job characteristics, rewards and recognition, perceived organizational, procedural justice and supervisor support.

The literature has identified conceptual and empirical linkages towards the development of employee engagement although often in disconnected and disparate conversations. Mainly, engagement is mentioned as a behavioral outcome (Shuck & Wollard, 2010)and small attention is given towards the antecedents, which potentially drive the *emotional and cognitive* states of engagement that are believed to facilitate the behavioral manifestation of what can be seen as employee engagement. The subsequent sections discuss the extant literature on employee engagement antecedents starting with the individual antecedents to the organizational antecedents.

Individual Antecedents

Employee engagement is mainly an individual-level variable but it is measured at the organizational level (Shuck & Wollard, 2010). Considering the significant role of employee's individual factors and personality, little is known regarding employee engagement's individual antecedents and other variables that may contribute towards the overall development of employee engagement. In the literature, there are some associations reported; but this issue is not without critique and debate. Such as, the workplace environment and involvement of an employee's in contextually meaningful work is considered to be linked to employee engagement (Rich et al., 2010). Similarly, the perception of culturally, physically safe environments, emotionally, and individual factors, are also related to the employee engagement development as antecedents (May et al., 2004). Work–life balance (Singh, 2010), corporate citizenship

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behaviors with personal involvement (Glavis & Piderit, 2009), and the linkage in an employee's work to organizational goals (Harter et al., 2002) are well addressed in the existing literature.

Research by European researchers' Schaufeli and Maslach depict that a number of variables for instance dedication, absorption and vigor in work are considered as individual antecedents to the employee engagement development. All of these variables are operationalized in the "Maslach Burnout Inventory" (MBI-GS; Maslach & Leiter, 1997) as the burnout opposite state, other individual variable with its individual antecedents set (e.g., cynicism, ineffectiveness; exhaustion, Maslach & Leiter, 1997) and "Utrecht Engagement Scale" (Schaufeli et al., 2006). Another work by Shirom (2007) and Shagra (2007) depicted a linkage between vigor (i.e., engagement; Maslach et al., 2001) and the extroversion and openness factors of the "Big Five personality variables" (Extroversion, Conscientiousness, Openness, Neuroticism, and Agreeableness). Their work also reported that "*Openness*" predicted engagement and that "*Extroversion*" predicted engagement levels at different points of time.

Other research work regarding individual antecedents is conceptual, and also adding important thought to the current conversation, but a little in contexts of evidence related antecedents. Such as, in a study by Macey and Schneider (2008) revealed that an auto-telic personality, conscientiousness and proactive personality traits positively influence employee engagement development as individual-level antecedents. Their work, based in Maslach et al.'s (2001) and considered that work environment perception of an employee's would lead to organizational outcomes (Maslach & Leiter,1997; Maslach et al., 2001), stated salient cues of an individuals' personality could be a influencing factor in employee engagement development.

Others have suggested that family and work status, a readiness to direct personal energies, emotional connection and stress are connected to the employee engagement development, although these associations are ripe for research and not yet empirically driven. Additionally, various workplace antecedent models have revealed the several individual antecedent variables for instance curiosity (Reio et al., 2006), self-efficacy (Macey & Schneider, 2008), self-esteem, self-perceptions (Xanthopoulou et al., 2007), all contribute an important role in the work-oriented variables development at an individual level. Although any research has not explored these associations and engagement (Maslach & Leiter, 2008), a number of researchers' has demonstrated a relationship between all personality traits like those discussed above and widely researched organizational variables such as involvement, job satisfaction, and commitment (Judge et al., 2004).

Organizational Antecedents

Organizations are always complex and complicated mazes for the employees to navigate. However, when discussed regarding employee engagement, antecedents that drive the engagement development at organizational level take place around basic human needs. Thus, the identification and meeting of basic human needs depicts complexity lack, yet outlines the difficulty of creating organizational situations for engagement to take place. This may resonate for anybody who has tried to internal motivation work teams, which involved different personalities and perceptions at organizational level.

Empirically, the managers' role has been investigated in extant, most considerably from research using the "satisfaction-engagement approach" (Shuck, 2011). Such as, research has suggested the manager self-efficacy role (Arakawa & Greenberg,2007), managers' role in establishing a supportive climate (Kroth & Keeler, 2009;Plakhotnik et al., 2011), mission and vision implementations on a local level (Fleming & Asplund, 2007), and perception of manager expectations (Bezuijen et al., 2009) research has also

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stated that managers using non defensive approach (Shuck et al., 2011) positively influence employee engagement. Additional, the culture role (organizational and local micro cultures) have been investigated as an important antecedent variable (Brown &Leigh, 1996; Shucket al., 2011).

In addition, research has revealed that supportive workplace climates, positive and authentic all work to increment conditions positively affect engagement. Similarly, positive workplace climates (Dollard &Bakker, 2010) have been mentioned to involve the supportive management perception, recognition, in-role tasks role clarity, organizational success, self-express ability, and job challenge and control at appropriate levels (Brown & Leigh, 1996). In addition, as an organizational variable, Culture, is mainly a force which is outside the employee's direct control but always within manager's or a leader sphere of influence, stating a conceptual relationship between engagement and leader behavior(Shuck &Herd, 2011). Moreover, manager conscious choice for team to emphasize on increasing engagement is consider to be a positive antecedent to engagement development; a type of self-fulfilling prophecy effect in workplace. Lastly, organizational initiatives for instance CSR programs that include service work and employee volunteerism have been investigated as an empirically driven antecedent (Lindorff & Peck, 2010).

Cross-cultural literature, which emerging conceptually has depicted that hygiene factors external to the employee contribute potential conditions for their engagement at the organizational level (Schaufeli et al., 2008; Shucket al., 2011). Thus, hygiene factors are operationalized as reasonable working conditions, a reasonable degree of security, including fair pay and trust at low level with the leader (Herzberg, 1959,1968). When these hygiene factors are not fulfilled, employee engagement is not likely to develop. Research regarding providing resources, job control, setting clear expectations support this idea(Harter et al., 2002).

Additionally, a number of authors suggest that learning opportunities (Czarnowsky, 2008)and talent management (Hughes & Rog, 2008) that consist of organizational development and employee initiatives are antecedents to employee engagement. Unfortunately, no empirical work could be identified that emphasized mainly on human resource development role, human resource management and organizational development practices as antecedents to employee engagement, although it is a highly recommended antecedent.

Finally, rewards for instance monetary incentives and pay-for-performance have been examined in the extant literature and connected somewhat to the hygiene discussions and Justice, fair pay issues. Moreover, internal motivations that take place from extrinsic feedback sources in term of job encouragement and sincere recognition have been conceptually associated as antecedents to employee engagement, but no empirical support exists on the association. A number of evidence does state that poorly appropriated monetary structures may underestimate organizational engagement efforts (Demerouti & Cropanzano, 2010; Sparrow & Balain, 2010).

Summary of Antecedents

Varying types and levels of antecedents have been explored and examined with the concept of employee engagement, some empirical and others conceptual. What is clear from this review is that antecedents are not process dependent, but rather functions in the conditions for the state of engagement to develop. Different organizations will come to create an employee engagement culture in different ways, using different strategies and methods that are unique to their organization. In no literature did a one process model fit across all antecedents or strategies. Furthermore, it is also clear that antecedents related to each organization must be in place, but processes to facilitate the development of an engagement culture

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are also in play. A detailed discussion of the processes for the development of employee engagement is however outside the

primary research question used to guide this review and is suggested for further research and scholarly inquiry.

CONSEQUENCES OF EMPLOYEE ENGAGEMENT

The motivation behind the attractiveness of employee engagement is that it has a number of positive outcomes for organizations. As specified earlier, there is a common belief that there is a association between employee engagement and organization results (Harter *et al.*, 2002). However, engagement is an individual level constructs and therefore, if it does cause organization results, it should first have an effect on individual level outcomes. Thus, there is reason to suppose employee engagement to be associated with individuals' intentions, behaviors and attitudes.

Kahn (1992) suggested that engagement resulted into both individual outcomes (i.e. work quality and work experiences), and organizational outcomes (i.e. organizational productivity and growth). In addition, the Maslach *et al.* (2001) model considers engagement as a mediator for the association between work conditions and different outcomes of work (such as burnout, increased withdrawal, job satisfaction, lower performance, organizational citizenship behaviour and organizational commitment (Maslach *et al.*, 2001).

Once employees become more engaged, they usually find their own work more meaningful, inspirational and self-fulfilling, accordingly they become more concentrated, engrossed and dedicated in their works. This motivated and positive mind stay should continue to how they serve and treat customers. As such, a number of research has depicted that engagement affects not only "in-role behavior" but also "proactive behavior" (Sonnentag, 2003) and employee extra-role behavior for instance organizational citizenship behavior (Rich et al., 2010). It seems that an engaged employees have an elaborated view regarding their work role and have a wider set of activities in their jobs. This states that, employee engagement will have a positive effect on how they handle their duties, involving providing superior customer services.

Harter et al. (2002) suggested that engagement is positively associated to significant business performance metrics for instance profitability, customer satisfaction, productivity and loyalty. The similar results in engaged employees will work out of excitement and sheer joy of rendering superior service to customers. Some researchers believed that engaged employees to be friendly, prompt in service delivery, motivated to recommend appropriate products as per customer needs and attentive to customer problems(Young et al., 2009). There are a number of consequences of employee engagement including, first, *Intent to quit*, i.e. workers who have lower levels of dedication revealed greater intentions to quit. Second, *Job satisfaction*, i.e. employees working in larger properties has higher levels of Dedication, Absorption, and Vigor with more job satisfaction. Third, *Employee voice*, i.e. employees who supervised others and usually worked in larger properties depicted high levels of Vigor revealed engaging in more voice behaviors among employee. Fourth, *Work-family conflict*, i.e. employees who supervised others and occupied top levels in organization they usually displayed high levels of Vigor depicted less work-family conflict; employees depicting high levels of Absorption depicted enhanced levels of work-family conflict. Fifth, *Family-work conflict*, i.e. employees who supervised others, occupied top organizational levels, and worked in larger properties, depicted high levels of Vigor and low levels of family-work conflict; workers showing high levels of Absorption also depicted more family-work conflict.

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Some other observations are also worth to be noting. First, personal demographic factors were particularly unrelated to employee work outcomes. Second, work situation characteristics responsible for a significant increase in explained variance on their work outcomes. Thus, surprisingly, employees at top organizational levels and supervising others, depicted high favorable outcomes at work in some cases. Third, work engagement also responsible for a significant increase in explained variance on their work outcomes. Interestingly, Absorption and Vigor had an important but different linkage with the two family-work and work-family conflict measures.

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Chapter 10
How Does Empowering Leadership Contribute to Organizational Commitment of Millennials?
An Indian Perspective

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ABSTRACT

This chapter explores the influence of empowering leadership on organizational commitment of Indian millennials. Also, the mediating effect of trust in the leader is examined. Primary data were collected from the sample of 440 IT employees working in Delhi/NCR. Structural equation modeling (SEM) was used to test the proposed relationships based on model fit and standard path coefficients. Findings indicate that empowering leadership has a significant positive effect on organizational commitment and trust in the leader, which also has a significant positive effect on organizational commitment, and trust in the leader has shown to have a partial mediating effect on the relationship between empowering leadership and organizational commitment of millennials. The chapter contributes to the limited empirical literature on the linkage between empowering leadership and organizational commitment in a generational context, specifically millennials in Indian context. The chapter provides a leadership-based approach to bolster organizational commitment of millennials.

INTRODUCTION

In today's dynamic business environment characterized by competition, technological changes, and increasing quality demands; classic leadership theories have become insufficient and the emphasis in leadership has shifted from *command and control* to leadership *as a source of employee development and innovation* (Yukl, 2006). Also, such an environment calls for organizations to invest significantly

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to attract, select and retain employees with high levels of commitment (Schneide *et al.*, 2009). There is, therefore a need for research directed toward identifying the organizational factors that promote positive employee attitudes particularly, organizational commitment. In the same vein, organizations design strategies to empower their employees in a bid to foster commitment and retention rates, to stay competitive. This is drawn from the past research that supports hat empowered employees are associated with higher levels of job satisfaction, commitment, and performance. However, among the many enablers, one of the determinants of to infuse empowerment is leader-follower relationships (Kozlowski & Bell, 2003; Spreitzer, 2008).

The extant scholarship suggests that effective leadership plays a key role in influencing employee positive attitude and has, therefore, been the subject of extensive research. Yukl (2006) defines leadership as "the process of influencing others to understand and agree about what needs to be done and how to do it, and the process of facilitating individual and collective efforts to accomplish shared objectives" (p. 8). With the evolution of the leadership domain, other forms of leadership such as empowering leadership have attained academic attention. Empowering leadership encourages sharing of power, authority, and responsibility to the followers (Zhang & Zhou, 2014). Past evidences have shown a positive significant impact of empowering leadership on employee positive attitudes. However, most of this literature is related to team-environments and has not explored the IT work setting (Srivastava & Bertol, 2006). Research on empowering leadership, however, has not examined the mediating mechanism that determines the leader's influence on employee organizational outcomes at individual level.

In response to concerns about the lack of commitment and intention to stay among Indian Millennial employees, several studies have identified this challenge and called for strong leadership and trusting environment to create an engaged and committed workforce (Bhatnagar, 2007). Empowering leadership is viewed as behaviors that generate trust and organizational effectiveness (Avolio, Gardner, Walumbwa, Luthans, & May, 2004). This approach of leadership underscores the importance of fostering employee self-directedness achieved through sharing of power, and its positive implication on follower attitude and performance (Carson Tesluk, & Marrone, 2007; Srivastava & Bertol, 2006). The extant literature on leadership provides support for the mediating effects of trust in the leader and leadership influence on followers. Trust is considered the foundation of positive organizational cultures and, in essence, defines healthy workplaces (Khatri, Halbesleben, Petroski, & Meyer, 2007). Trustworthy leaders instill a willingness to put extra efforts and deep level of emotional attachment with the organization. The objective of this study was to examine the relationship between empowering leadership, trust in the leader, and organizational commitment using a Millennial employees' sample. The model incorporates trust in leadership to explain the mechanism by which empowering leadership, influences organizational commitment.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Empowering Leadership and Organizational Commitment

Empowering leadership is defined as the extent to which supervisors express confidence in their employees' abilities, emphasize the significance of their employees' work, involve their employees in decision making, and reduce or remove bureaucratic constraints on their employees for better execution of tasks (Ahearne, Mathieu, & Rapp, 2005; Zhang & Zhou, 2014). http://www.emeraldinsight.com/doi/full/10.1108/13673271111119709 It is comprised of five dimensions: "leading by example, referring

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to a set of behaviors that show the leader's commitment to his or her own work as well as the work of his/her team members; coaching, referring to a set of behaviors that educate team members and help them to become self-reliant; participative decision making, referring to a leader's use of team members' information and input in making decisions; showing concern, referring to a collection of behaviors that demonstrate a general regard for team members' well-being; and informing, referring to the leader's dissemination of company wide information such as mission and philosophy as well as other importation information" (Arnold et al., 2000, in Xue, Bradley & Liang, (2011), p. 302). Empowering leadership can be viewed, therefore, as essentially an approach that offers prescriptions to leaders for arranging the distribution and exercise of power. Literature on empowering leadership is focused on two perspectives. The first is based on leader actions such as sharing power or decision-making discretion, and autonomy to employees, in order to motivate them (Kirkman & Rosen, 1999). The second perspective emphasizes on employees' response to empowerment, specifically employees' motivation to empowerment (Thomas & Velthouse, 1990).

Organizational commitment is defined as "the relative strength of an individual's identification with and involvement in a particular organization" (Mowday, Porter, & Steers, 2013, p. 27). Past evidences suggest that work experiences, personal and organizational factors are the enablers of organizational commitment (Eby, Freeman, Rush, & Lance, 1999; Meyer et al., 2002). Leadership has been considered one such key organizational factor, which serves a strong predictor of organizational commitment is (Mowday et al., 2013). In the same vein, there is substantial evidence to support the association between leadership styles and organizational commitment in a variety of work context (Avolio et al., 2004; Bono & Judge, 2003; Lok and Crawford, 2004; Walumbwa & Lawler, 2003). The extant scholarship indicates that leaders that encourage responsibilities, provide opportunities for decision latitude, challenges, listen attentively and promote teamwork, are expected to evoke positive attitudinal response in followers manifested as higher levels of commitment to their organizations (Avolio et al., 2004; Kark & Shamir, 2002; Liden *et al.*, 2000; Seibert *et al.*, 2004; Wayne, Liden, & Sparrowe, 2000).

Therefore, we argue that through their empowering behaviors such as power sharing, decision making authority, autonomy, employee development; empowering leaders create a perception among followers, of being more capable and able to influence their job and organizations. If so, then they would also be expected to exhibit higher levels of commitment (Spreitzer, 1995). This is because employees who feel more empowered are more likely to reciprocate by being deeply committed to their organization (Eisenberger, Fasolo, & Davis-LaMastro, 1990; Kraimer, Seibert, & Liden, 1999). Further, past research indicates that empowered employees are focused; initiative-takers, and resilient, which in turn bolster their organizational commitment. In other words, employees' level of commitment is influenced to the extent to which they perceive their organization and the leader to acknowledge their contribution and care about their well-being. Importantly, leaders enhance employees' commitment by providing a supportive work environment characterized by concern for employees' well-being, adequate information sharing, and well-defined goals (Cheung, 2000). Further, this is consistent with the transformational leadership theory, which asserts a key role of role of empowerment to generate employee organizational commitment (Avolio, 1999; Yukl, 2006). Thus we hypothesize-

H1: Empowering leadership behaviors is positively related to employee organizational commitment.

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Empowering Leadership and Trust in the Leader

Over the years the concept of trust has been the subject of wide academic attention in organizational behavior research (Dirks & Ferrin, 2002). Various scholars have suggested different definitions of trust. In broad terms, trust is defined as "a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behavior of another" (Rousseau et al., 1998, p. 395). However, interpersonal trust, specifically, between a trustor (the subordinate) and the trustee (the superior/leader) has been the focal point in organizational behavior literature. Interpersonal trust is conceptualized as "a belief about a set of particular characteristics of another specific individual(s)" (Hassan & Ahmed, 2011, p. 164). While, leadership trust refers to leader-member relationship based on mutual respect, cooperation, commitment, reliability and equity (Dirks & Ferrin, 2002).

The extant literature indicates a strong effect of leadership on follower trust (Goodwin et al., 2011; Norman 2006). Empowering leaders generate follower trust through their empowering behaviors including encouraging participative decision making, removing bureaucratic barriers, exhibiting confidence and belief on them to resolve problems, leading by example, sharing information, coaching, demonstrating concern for them, treating them with respect, and recognizing their contributions (Ahearne, Mathieu & Rapp, 2005; Zhang a& Zhou, 2014). Though leaders are instrumental in developing the followers' trust, little research has examined the specific leadership styles which evoke trust. However, past scholarship acknowledges that transformational and authentic leadership are more effective in generating trust by demonstrating individualized concern and respect for followers (Jung & Avolio, 2000). Drawing from social exchange perspective, social relationships are formed, sustained or severed based on the perceived cost-benefit analysis. A sense of reciprocity develops when leaders exhibit concern for followers by providing them emotional and informational support, in turn, evoking positive psychological responses of trust (Cropanzano & Mitchell, 2005). In other words, in response to leader's empowering behaviors, employees feel more comfortable and willing to trust their supervisor. Thus we hypothesize-

H2a: Empowering leadership influences employees' trust in the leader.

Mediating Role of Trust

Despite being given considerable scholarly attention, trust has not been empirically tested for its mediating effects on leadership outcomes (Bartram & Casimir, 2007; Jung and Avolio, 2000). Like in any other social relationship, apart from certain behaviors there must be a mechanism that acts as s glue to keep the parties committed to cotniue the relationship. Therefore, followers must perceive trust in the leader in order to feel positively about the leader and the organization. This is based on the notion that trust plays a key role in productive interpersonal relationships including leader-member relationships. Leadership is considered trustworthy based on leadership's vision, strategy implementation, focus on followers' interests, and ability to communicate. Therefore, if followers develop a perception that the leader is not taking keen interest in their learning and welfare activities, it will dampen the level of trust in the leader and therefore it has deteriorating effect on their satisfaction, engagement, and commitment with the organization. In this regard, the leader's integrity, competence, and benevolence, is crucial as it has bearing on the decisions taken by leader, which directly influence followers future. If the leader scores highly on these trust-building factors, then it will signal a profitable future of followers in the organization, thus resulting in higher commitment (Dirks & Ferrin, 2002). Thus, we expect trust in lead-

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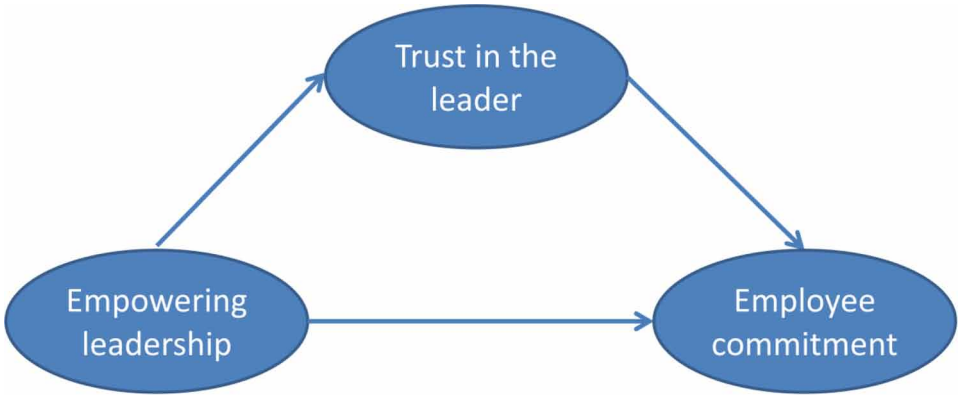
ership be associated with followers' positive attitudes, which in turn will be related to positive behaviors. Specifically, empowering leadership behaviors such as participative decision-making practices, supplying organizational support, and ensuring that expectations are met were related to greater trust in leadership.

Evidences from past behavioral research reveals that leadership trust is necessary for effective leadership (Barey, 2002; Morgan,and Zeffane, 2003). It has been empirically shown that leadership trust acts as mediator in influencing empowering leadership effect on organizational commitment and empowering behaviors are instrumental in generating trust (Laschinger, Finegan, Shamian, & Casier, 2000). Although, several scholars notes the association between trust in the leader and employee attitudinal outcomes such as satisfaction, commitment, leading to increased performance (Bartram & Casimir, 2007 Dirks & Ferrin, 2002; Korsgaard, Brodt, & Whitener, 2002). In particular, the past scholarship suggests a positive relationship of empowering leadership and organizational commitment in different work settings (Bono & Judge, 2003; Seibert *et al.*, 2004; Liden *et al.*, 2000; Walumbwa & Lawler, 2003). Further, Avolio, et al. (2004) corroborated that organizational commitment was higher for employees whose leaders display empowering behaviors such as participative decision-making, relationship building, teamwork, and avenues for followers' growth and development. Also, empowering behaviors have been shown to be linked with trust generation. Therefore, it is logical to argue here that empowering leadership will indirectly influence follower commitment through the development of trust in leader, which serves as the mechanism through which empowering leadership impacts employee organizational commitment. This is in agreement with the extant literature, which demonstrates a positive impact of empowering leadership on trust, which in turn, mediates its relationship with employee attitude (Bobbio, Bellan & Manganelli, 2012). Other studies reveal that in the presence of trust, empowering leadership leads to a positive attitude change. Thus the attitude of the employee towards an objective tends to change when the empowering leadership is exercised in the presence of trusting behaviors (Goodwin et al., 2011; Zhang & Zhou, 2014). In the similar vein, this study hypothesizes that trust mediates the effect of empowering leadership with attitude as an outcome. Thus we hypothesize-

H2b: Trust in the leader influences employees' organizational commitment

H3: The effects of empowering leadership on organizational commitment will be mediated by trust in the leader.

Figure 1. Theoretical Framework



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METHOD

Sample Description

The last decade or so has witnessed a spurt in IT industry in India. Consequently, the work setting for this study is a top-notch IT organization in Gurgaon, NCR. The organization operated 24 hours-a-day to provide IT solutions for clients from different countries. Although, management of IT organizations has traditionally been command and control type with stringent rules and deadlines, however, of late, there is a transformation in the management strategies highlighted by growing interest in employee empowerment (Gofton, 1999).

A cross-sectional survey design is used to gather primary data. The sample for this study is comprised of software programmers who belong to Millennial population i.e. born in between 1981-2000. The line managers were deemed fit for assuming leadership roles as they directly supervise their immediate subordinates. We made personal contact with HR Managers to persuade them to contribute in this study. We administered 650 questionnaires from October 2015 to December 2015. In all, 440 completely filled questionnaires were collected with a response rate of 67.69%. The average age of the executives was 23.2 years (S.D.=5.6), and they, on average, had worked in the organization for 3.5 years (S.D.=4.2). Out of this sample 54% are males and 46% are females, with an age group of 20-24 represented by 45% respondents, 25-29 by 32% and 29-34 by 23%, with an average working tenure with their immediate supervisors for 1.6 years (S.D.=1.7).

Instrumentation

Questionnaire items were adapted from pre-existing validated scales. The five-point Likert scale (1=strongly disagree, 5=strongly agree) was used as the measurement method.

Empowering leadership- We used the 12-item ($\alpha = .94$) scale developed by Ahearne et al. (2005). A sample item is ‘‘My supervisor expresses confidence in my ability to perform at a high level’.’ Responses were measured on a 5-point Likert scale ranging from 1 (“strongly disagree”) to 5 (“strongly agree”).

Trust in Leadership: A 6-item ($\alpha = .83$) scale by (Podsakoff et al. 1990) was used to measure trust. An example item is ‘‘I have complete faith in the integrity of my manager/ supervisor’’.

Organizational Commitment: It is measured by Mowday et al.’s (1979) 15-item ($\alpha = .86$) organizational commitment questionnaire (CQ). An example is “I really feel as if this organization’s problems are my own“.

Controls

To avoid potentially misleading relationships between our study’s variables and to enhance the validity of the study, the probable influence of age-group, gender, education, and experience were controlled. The coding schemata for the categorical control variables are shown in Table 1.

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Table 1.

Construct	1	2	3	4	5	6	7	CR	AVE
1. Age	-								
2. Gender	0.07	-							
3. Experience	0.10	0.06	-						
4. Tenure	0.05	0.10	0.05	-					
5. Empowering Leadership	0.12	0.13	0.12	0.10	(0.94)			0.98	0.71
6. Trust in leader	0.10	0.11	0.10	0.15	0.36	(0.83)		0.93	0.82
7. Employee commitment	0.08	0.09	0.08	0.09	0.28	0.44	(0.86)	0.89	0.74

Figures in parenthesis denote Cronbach alpha; CR= Composite reliability; AVE=Average variance extracted (N=195)
Notes: * p< 0:05, ** p<0:01, Reliability estimates (Cronbach's alphas) are in parentheses.
Age-group (in years): 1= 20-24 (45%), 2= 25-29 (32%) and 3= 29-34 (23%).
Gender: 1 = Male (54%), 2 = Female (46%).
Education: 1 = Diploma (24%), 2 = Graduate (54%), 3 = Post Graduate (22%),
Experience (in years): 1= 0-2 (42%), 2 = 2-4 (30%), 3 = 4-6 (18%), 4= > 6 (10%)
Tenure with supervisor (in years) 1= 0-2 (62%), 2 = 2-4 (20%), 3 = 4-6 (18%)

Table 2. Construct reliability, AVE, and correlations

Construct	Item	Mean	SD	Loading
Lead by Example	1	3.90	0.96	0.88*
	2	4.09	0.91	0.94*
	3	4.03	0.96	0.91*
	4	4.07	0.91	0.94*
Participative DM	1	4.03	0.89	0.93*
	2	4.10	0.87	0.95*
	3	4.14	0.83	0.95*
Coaching	1	3.89	0.93	0.92*
	2	3.97	0.87	0.93*
	3	3.93	0.92	0.92*
Informing	1	3.94	0.92	0.92*
	2	3.90	0.93	0.95*
	3	3.80	0.95	0.91*
	4	3.94	0.90	0.90*
Sharing Concern	1	3.73	0.95	0.86*
	2	3.89	0.88	0.92*
	3	4.11	0.86	0.86*
	4	3.91	0.88	0.90*

Construct	Item	Mean	SD	Loading
Trust in the Leader	1	3.80	0.79	0.89*
	2	3.79	1.01	0.87*
	3	3.80	1.11	0.85*
	4	3.81	1.05	0.88*
	5	3.80	0.88	0.84*
	6	3.82	1.09	0.91*
Affective	1	3.61	0.88	0.91*
	2	3.61	0.71	0.90*
	3	3.60	0.69	0.86*
	4	3.62	0.65	0.92*
	5	3.61	0.81	0.84*
Countenance	1	3.75	0.93	0.90*
	2	3.74	0.84	0.90*
	3	.3.75	0.82	0.94*
	4	3.73	0.75	0.89*
	5	3.73	0.69	0.88*
Normative	1	3.62	0.68	0.88*
	2	3.61	0.81	0.87*
	3	3.60	0.92	0.88
	4	3.62	0.82	0.84
	5	3.61	0.95	0.86

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Table 3. Factor Loadings

Variables	χ^2/df	GFI	TLI	CFI	RMSEA
Empowering Leadership	3.284	.954	.073	.972	.983
Trust in the leader	3.112	.935	.960	.970	.041
Employee commitment	2.224	.958	.963	.986	.070

Results

Preliminary Analysis

Data analysis for the present study was done using SPSS 21.0 and AMOS 7.0 softwares. Hypotheses testing were carried out through correlational analysis and regression technique. Reliability estimates, correlations, and descriptive statistics including standard deviations for all the variables under study are depicted in Table 1. Before proceeding for hypotheses testing, firstly the measurement model was examined for dimensionality, convergent, and discriminant validity through Confirmatory factor analysis.

In agreement with the extant research, CFA reveals that the five dimensions were significantly loaded on the empowering leadership construct (b= 0.86 to 0.95; a= 95 percent). The fit indices indicates the acceptable fit measures (χ^2 */df* = 3.284, p= 0.000, GFI= 95, CFI= 0.98, TLI= 0.97, NFI= 0.98, RMSEA= 0.073). For trust in the leader, scale fit indices show an adequately acceptable fit (χ^2 */df* = 3.112, GFI= 0.93, CFI= 0.97, TLI= 0.96, NFI= 0.96, RMSEA= 0.041). CFA reveals that the six itmes were significantly loaded on the trust in the leader construct (b= 0.84-0.91; a= 95 percent). While, the fifteen items assigned for measuring organizational commitment were averaged to one score of organizational commitment. Conducting CFA reveals that the scale fitted the data adequately (χ^2 */df*= 2.224, GFI= 0.95, AGFI= 0.92, CFI= 0.98, TLI= 0.96, NFI= 0.97, RMSEA= 0.070). Furthermore, results show that the fifteen items significantly loaded onto the organizational commitment construct with(b= 0.86-0.94; a= 95 percent).

Structural Model

As depicted in Table 3, the proposed model of empowering leadership, trust in the leader, and organizational commitment is found to exhibit acceptable fit indices (Hair et al. 2010). Findings of CFA reveal that the hypothesized model acceptable fit (χ^2 */df* = 2.01, GFI = 0.95, AGFI = 0.92, RMSEA = 0.078, CFI= 0.97; TLI= 0.97; NFI= 0.95). The value of coefficient paths were statistically significant ($p < 0.01$). Overall, the model explains 29 percent of the variance in organizational commitment.

Test of Hypotheses

Findings reveal that the standardized coefficient between empowering leadership and organizational commitment was significant (β =.70, $p < 0.01$) thus providing support for H1. Also, the relationship between empowering leadership and trust in the leader was found to be positive with the standardized coefficient was significant ($\beta = 0.59$, p<.01) that strongly supported H2a. Also, trust in the leader was positively related to organizational commitment. The standard path coefficient was significant ($\beta = 0.63$

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. p<.01) supporting H2b. Finally, the direct standard path coefficient between leadership empowering and organizational commitment was significantly reduced to ($\beta = 0.36$, p<.01) in the mediated model. Therefore, the result suggested partial mediation effect of trust in the leader between empowering leadership style and employee organizational commitment and thus partially supporting H3. Furthermore, the result reveals a 38% explained variance, which was well within the prescribed limit of 50%, the minimum threshold in accordance with Harman's single factor test (Podsakoff et al., 2012), thereby indicating that common method variance has been death with effectively.

DISCUSSION AND IMPLICATIONS

This paper aimed at examining the impact of empowering leadership on organizational commitment through the mediating role of trust in the leader. As proposed, the direct relationship between empowering leadership and organizational commitment was established, thus supporting H1. In other words, the findings demonstrate that Millennial executives supervised by empowering managers are more likely to be committed. The findings are consistent with previous research (Albrecht & Andreetta, 2011; Laschinger, Finegan & Shamian, 2001). Second, this study identified that empowering leadership positively influences perception of trust in the leader among Millennial followers, thereby supporting H2a; and that trust in the leader is shown to predict organizational commitment, thereby supporting H2b. Finally, the results of H3 lend support to a partial mediation of trust in the leader between empowering leadership and organizational commitment of Millennial employees. These results are in agreement with the empirical support driven from past literature that interpersonal trust has a positive significant impact of on organizational commitment (Dirks & Ferrin 2002; Nyham, 1999; Song, Kim & Kolb, 2009; Yang, 2005). Therefore, this study further confirms the findings of earlier studies and explains the impact of empowering leadership on organizational commitment.

The present study is significant for both managerial as well as theoretical perspective. From theoretical vantage point, the study contributes to limited empirical literature on the relationship between empowering leadership, trust in the leader, and organizational commitment. Although, substantial evidence is available for the influence of transformational and authentic leadership on trust and organizational commitment, still there is lack of studies on empowering leadership's impact on these outcomes. To the best of our knowledge, no study has examined the impact of empowering leadership on followers' trust in the leader Indian IT industry. Importantly, this study addresses the call for research to explore the mechanism underlying the impact of empowering leadership on organizational commitment (Dewettinck & Ameijde, 2011).Further there is an exigent need to enhance the IT Millennial employees' organizational commitment levels, given the present higher attrition rates in Indian IT industry especially among young generation employees i.e. Millennials (Naim & Lenka, 2017b). Recent estimates suggest Indian IT industry has experienced roughly 30 percent executive-level attrition rates in the last fiscal year (The Times of India, 2014).

From managerial vantage point, this study presents a strategy for HR managers to bolster employee organizational commitment rates. In this view, organizations should offer training and workshops to line managers or supervisors to improve their empowering behaviors to achieve reciprocal positive response from the executives. This argument is based on the notion that it is possible to impart empowering leadership behaviors through training interventions (Nielsena & Munir, 2009). These interventions would enable line managers or supervisors realize the significance of aligning Millennial executives' targets in

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alignment with their personal objectives. In addition, leveraging empowering behaviors fuel committed workforce, which is a sustainable source of competitive advantage in contemporary business landscape. Also, committed employees have higher likelihood of staying forth with the organization (Naim ^ Lenka, 2016). This is highly important in context of Indian IT industry, which registers high attrition rates in the Indian economy (Naim & Lenka, 2017a).

Limitations and Future Scope

This paper has some limitations, which could lead to directions for future research. Firstly, the relatively small sample size and cross-sectional nature limits its generalizability and causality. Secondly, as it was carried out in an IT organziation, empirical findings of the study could be more applicable in Asian countries as compared to Western ones Future studies should explore industries like IT, retail, or pharmaceutical. As quantitative research design has its obvious limitations so future studies should employ qualitative methods like focus interviews to further examine the results of this study.

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Chapter 11
Conceptualizing Causative Factors of Workplace Cyberbullying on Working Women

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ABSTRACT

This chapter conceptualizes workplace cyberbullying, with special reference on workplace cyberbullying perpetrated on working women. It shares various causative factors that lead to workplace cyberbullying on women. The situation across the world and with special reference to Indian situations on the social menace of workplace cyberbullying on working women and the traumatizing causatives are discussed in detail. Research reports and survey reports conducted across the world and in India related to workplace cyberbullying are discussed in detail. The psychological issues, socio-psychological triggers that induce bullying on women is discussed with the methods the bullies are inflicting on the victim across the world and with special reference to Indian working situations are analyzed in detail.

INTRODUCTION

Conceptualizing cyberbullying in the context of working women is gaining attention across the world (O'Neill & Dinh, 2013), and the technology, structure, technical infrastructure, and the physical proximity are inducing cyberbullying amongst women (Ybarra, Mitchell, Wolak, & Finkelhor, 2006). Workplace cyberbullying is common and it is evolving in subtle ways that makes it difficult to explain (Callaghan, Kelly, & Molcho, 2014). According to the National Crime Prevention Council (NCP) of the U.S., cyberbullying is understood as perpetrators using digital modes like the Internet, cell phones, or other digital devices to send or post text or messages to hurt or embarrass another person (Baynes, 2018, p. 138). The act of workplace cyberbullying is an act of aggression, or an act, which is intentional to harm a group or

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an individual, using electronic forms of contact repeatedly overtime against a victim (Ybarra & Mitchell, 2007, pp. 319-336). According to the Department of Education and Mental Health, workplace cyberbullying is an act of unwanted physical or verbal aggression inflicted by the perpetrator on the victim, that goes repeated for a long time, and it also involves an imbalance of power between the bully and the victim (Hinduja & Patchin, 2007, p. 89-112; National Children's Home, 2005). Workplace cyberbullying is also characterized by the bully using their higher social status over the victim to exert power to hurt (Ybarra & Mitchell, 2007), harass, name-call, gossip, spreading out rumours, threats or other forms of intimidation to the victim in the workplace (Duggan, 2017). In the case of workplace cyberbullying on women, it is increasing phenomenally in the digital age, wherein the mobile phones, social media platforms, and use of digital platforms to threaten through emails, or blogs over the Internet (Kowalski & Limber, 2007). Workplace cyberbullying on women can also be understood as a situation, wherein over a period, a woman employee is purposely and repeatedly subjected to negative actions like bullying or harassing women. The act usually happens by verbally, or digitally abusing them through gadgets or e-platforms (e.g, phone, email, web sites and social media) related to their work (Farley, Coyne, Sprigg, Axtell, & Subramanian, 2016), because of this situation, the working women face difficulty in defending themselves against these actions and feel embarrassed and are broken psychologically (Farley, Coyne, Sprigg, Axtell, & Subramanian, 2016).

There are several types of workplace cyberbullying inflicted on working women by the bully, that impacts them psychologically (Hertz & David, 2008). These include verbal bullying with the use of words to hurt, harm or damage the morale of the employee (Patchin & Hinduja, 2006) and it includes name-calling or insults by making sexual or bigoted comments (Mehari, Farrell, & Le, 2014). Workplace cyberbullying also includes harsh teasing such as indirect taunting and mimicking, or verbal threats in the workplace (Lehr & Bechrakis, 2018). The mode of relational bullying is by excluding any one person, usually the targeted victim, from a peer group of working women, as well as a bully through verbal threats or spreading rumours to intimidate the victim, which brings down the morale of working women (Surdin, 2009). In the reactive bullying mode, the bully usually picks up a former victim and perpetuates the negative act of cyberbullying (Primack & Johnson, 2017). Workplace cyberbullying is highly prevalent in the context of organizations as well as in the family system across the developing countries in the world, including India, that usually victimize women victims in a subtle manner which often goes unreported. For instance, one of the unique ways of bullying women is by damaging their personal property; as a result, victims lose their property legally, even when the women own it. Also, when the property becomes damaged beyond control, it makes the women feel helpless. Another frequent mode adopted in the organizations includes cyberbullying women by taking away their organizational role, or removing their names from an important listing related to the organizational task, and, deliberately ignoring their views and opinions even in the context of work (Smyth, 2010). It also includes removing the details about them or concealing information that is important for the women employees that is sensitive to their career development, and denying vastly important official communication (Walther et al., 2010). Apart from the above, bullying by an allocation of stiff, unrealistic, and unattainable targets pushes their workload beyond manageable limits (Alexandra & Ellen, 2013). This subtle way of humiliation on the women workers by spreading malicious rumours, or intentionally delaying, or stopping promotion, or training opportunities to prevent them from their career growth is another mode that is highly prevalent across the countries in the world, including India (Deniz, 2015). The above methods are used in organizations in a very subtle manner, and the methods often go unnoticed as an official routine, where women victims may not get an opportunity to stop the behaviour, and as a result, resent it.

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BACKGROUND ON WORKPLACE CYBERBULLYING ON WORKING WOMEN

The cyberbullying on working people including women predominates with three most common forms of cyberbullying that include the cyberstalking, Internet trolling, and hazing through the use of digital gadgets. These methods of cyberbullying are relatively easier for the perpetrators to inflict psychological damage on women, which at times goes unreported (Binns, 2013). Technological advancements, which came as a boon to the working life in the form of digital working platforms have created parallels of online harassment options in the hands of perpetrators. The digital platforms are now handy for the perpetrators with multiple supporting options as well as the advantages of switch over methods to bully women workers by posting electronically during working hours, and which is called as the act of cyberstalking (Spitzberg & Hoobler, 2002). The cyberstalking is an act of using online connectivity to repetitively harass another person with the intent to control, coerce, intimidate, annoy, or threaten others. Cyberstalking is a form of cyber harassment, which refers to engaging in an act to torment, terrorize, or offend an individual online to harm the female victim (Nobles, Reyns, Fox, & Fisher, 2014). The victims experience a continual state of anxiety or fear that affects their quality of life and that could compel them to alter their offline and online habits. At times when searching for new friends, many young women workers are likely to become victims of cyberstalking (Nobles, Reyns, Fox, & Fisher, 2014). This kind of cyberbullying impacts working women psychologically. In the case of Internet trolling, it happens over the Internet and it usually starts with the online community or group of people in an online gaming environment (Polsky, 2010). Internet trolling is a negative marked online behaviour (Chancellor, Lin, & Munmun, 2016) that makes trouble for a discussion forum, which includes flaming, griefing, swearing or personal attacks, including behaviour outside the acceptable realms, defined by several community forums from time to time (Chang et al., 2016). The Internet trolling is done with the only intention to elicit a reaction rather than disrupt or end with a personal amusement, and it is usually is very mild (Berson, Berson, & Ferron, 2002). On the other hand, cyberstalking is used for threatening a victim (Burgess-Proctor, Patchin, & Hinduja, 2009). The intention to cyberbully female workers with these two methods is to give peer pressure and to pull in the perpetrator as well as the women victims on a common digital platform, to establish a relationship, even if it is unwanted (Keith & Martin, 2005). Because it is done one-to-one, especially in an organization setting, or in a working relationship (i.e., a known colleague in the workplace or a supervisor or any superior), these offences are forced upon the victim. Thus, the victim must report to this person from the nature of the bullying at work, or for the offence. The victim must communicate directly through the email (Hinduja & Patchin, 2008), which can make the veracity of the damage much higher than other forms of bullying (Hinduja & Patchin, 2009), which is considered as the most dangerous form of cyberbullying against working women as it involves a credible threat to their life safety (Patchin & Hinduja, 2006). The modus operandi starts with a perpetrator, who may be a working colleague, supervisor, or a senior boss, who at times directly, indirectly, or sends repeat messages to intentionally harm the victim psychologically, or threaten their existence. Perpetrators at the worst may ask other colleagues to join him, or her, to repeat the perpetrating behaviour (Tettegah, Betout, & Taylor, 2006), either explicitly or by impersonating the victim, or may also involve other employees under them by connecting them or coercing them to get involved (Wolak, Mitchell, & Finkelhor, 2006).

In the case of trolling in the workplace, trolling is done by the perpetrator with intentions to provoke or offend the women victims to elicit a reaction. Unlike cyberstalking, trolling is usually done for disrupting either for the perpetrator's amusement or to combat an unknown enemy (Ybarra & Mitchell, 2004). The male supervisors do this especially on women victims and tend to look for a chance to undermine

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competent women workers or demean their official position (Ybarra, 2004). The perpetrators make a very subtle move while involved in the workplace cyberbullying of their victim employees (Ybarra & Mitchell, 2004), especially when they are women workers, in a way, because it looks like a task-related instruction or direction to get a job done for the organization. Besides, the perpetrators execute in a way that may not be easy to be classified as workplace bullying, and it looks like a reprimand, but usually, it consists of public verbal abuses (Bartlett & Bartlett, 2011). For instance, bullying the workers in public, with the only intention of humiliating them, and setting an unrealistic standard, keeps women employees' self-esteem low in their own eyes (Nielsen & Einarsen, 2012). Since every time she misses the target, she is questioned on the same, this makes the women feel unprofessional by making them feel the humiliation when not completing unrealistic and large targets (West, Dawson, & Topakas, 2011). After humiliation, perpetrators create a contract manipulation by devaluing the positions and threatening the employees in terms of job loss.

Hazing is the third kind of workplace cyberbullying. Hazing is an act of initiation from the victim into a group, and it involves hurtful behaviours between people who are equal in power, such as in social spheres (Sourander et al., 2010). Hazing can happen in the following situations, as it happens through cursing or yelling at the victims by the supervisors or managers in an organization (Sperry, 2009). Some of the hazing acts go to the extent of requiring victims to perform binge drinking, and even in the glamour industries are forced to gratify the people who are reporting or recommending to an immediate boss. Conceptualizing the consequences of cyberbullying and damages to working women is important (Lawrence, 2015). Currently, cyberbullying is now a declared social menace, which is pervading as a socio-psychological problem (Barlett, 2015). The advent of advanced technology (Coyne, Chesney, Logan, & Madden, 2009) and digital workplaces with seamless connectivity, enables cyberbullying to cross boundaries, and its pervasive effects are mindboggling with the support of social and digital media (Sarkar, 2015). Cyberbullying is now prevalent across the communities and has pervaded to all kinds of organizations or to the workplace, which is taking everyone to the culpable risk of experiencing cyberbullying (Snyman & Loh, 2015). In the workplace, cyberbullying predators often undermine women's actions when dealing with their clients by creating the false impression of their inability to help in advising them (Weatherbee, 2010). There is a needless discussion on the hours of work done by the supervisors in delaying the paperwork, making the deadlines to take away the opportunity, and by blowing up on the slightest mistakes, and not listening to the statements of defense from the employee, and picking on the different workers at different times (Cooper et al., 2014). The online harassments, with the advent of technology, are creating new ways for the perpetrators to bully, harass and abuse workers, have increased phenomenally (Djurkovic, McCormack, & Casimir, 2008). The use of information and communications technology in the digital platforms created for work are utilized in negative acts like hostile attempts to hurt, upset or embarrass working women, and this issue is on the rise (Woodrow & Guest, 2014). The harassments include cyberbullying through offensive emails, email threats, and indirectly implying with threatening messages (Beirne & Hunter, 2013). Perpetrators may bombard them with more work than they can handle (Dollard & Karasek, 2010), ill-treating them by posting defamatory gossip on blogs and social networking sites (Lutgen, Tracy, & Alberts, 2007), and issue threats through SMS, text messages, phone calls, and by posting personal details to unauthorized sites.

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Increasing Physical and Mental Health Hazards on Working Women

As a result, female employees face unwanted consequences like the feelings of fear (De, Baillien, & De, 2009), intimidation, stress, low morale, higher mental strain, and lower job satisfaction, and have no control over who witnesses the abuse (Bowling & Beehr, 2006). Workplace cyberbullying, especially on women, causes physical and emotional consequences in the victims including physical and emotional consequences such as stomach trouble, sleep disorders, anger, fear, confusion, distress, anxiety and finally depression (Acquadro et al., 2017). The mental health gets affected severely with consequences to women's' health and well-being. The common symptoms of bullying include headaches, nausea, ulcers, contemplating suicide, sleeplessness, skin rashes, irritable bowel syndrome, high blood pressure, and tearfulness with loss self-confidence. At times, these helpless women employees even try to adopt strategies to stop the perpetrators like being avoidant, coping, and ignoring the perpetrator, but due to official reasons, the perpetrator being the superior boss, women may have to tolerate the behaviour or move on (Acquadro et al., 2017).

The Mode of Workplace Cyberbullying Post Working Hours on Women

Controlling cyberbullying or taking any preventive measures to prevent women, victims, from cyberbullying or harassment at the organizational level becomes difficult, as cyberbullying continues post working hours, and often happens outside the working hours due to their connectivity online (Hauge et al., 2011). The user-friendly electronic gadgets, with the continuous support of connectivity (Baillien, Neyens, & De Witte, 2011) have a sophisticated technological infrastructure that catalyzes online bullying or cyberbullying (Hodson, Roscigno, & Lopez, 2006). The menacing culture is now widespread on working women (Ferris et al., 2007; Smith, et al., 2008). The perpetrators, usually the working colleagues or immediate supervisors, post rumours, threats, sexual remarks (Hinduja & Patchin, 2009), upload personal information including photographs, and create prerogative labels against victimized women (Hu, 2010). To inflict mental harassments, hate speech may be used against the victim, and as a result, victims experience low self-esteem (Chapin, 2014), increased suicidal ideation, and a variety of negative emotional responses, which increases their fear, anger, frustration, and finally pulls them into depression even while at home (Hinduja & Patchin, 2008).

PREVALENCE OF WORKPLACE CYBERBULLYING ON WORKING WOMEN ACROSS THE WORLD INCLUDING INDIA

Research studies recently done across the world on the ethnicity of online cyberbullied women by UNISON of UK in 2011 reported that 52 percent of Caribbean, 56 percent of black Africans, 51 percent of UK-born black employees were bullied online (cyberbullied) compared to 33 percent of white employees (Diaz, 2016). While taking the country-wise stance, 61 percent in China, 53 percent in India, and 53 percent in Pakistan, were cyberbullied, and developing countries including India have a higher rate of cyberbullying on women than any other country. Cyberbullying on working women increase their fear of coming to work, lower their self-confidence and self-esteem, and in extreme circumstances, can lead to self-harm, and even suicide. In developing countries like India, bullying causes physical and mental health and gives work-related stress because there are no preventive measures supported by legal aid,

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and with limited job availability, women do not like to lose their jobs, and hence tolerate the menace. It affects both the performance and the morale of the workforce who witnessed the bullying (O'Keeffe & Clarke-Pearson, 2011).

Trivializing Workplace Cyberbullying Increases Cyberbullying on Women

Working women employees need to tackle the risk of workplace cyberbullying when bullying or cyberbullying is accepted as a part of the work culture (Ramasubbu, 2015). In 2011, Unison survey found that nearly 23 percent of the women witnesses felt that they may be the next target and this fear made them quit their job (Hasebrink et al., 2009; 2011). Retaining women employees becomes a challenge and the cyberbullying culture in the workplace becomes difficult to handle (Moreno, 2014). Tackling workplace cyberbullying needs to be immediately resorted, since it becomes stressful, and neglecting it may escalate it into a big problem (Phillips, 2012). Accepting it as an incident at the workplace increases stress in the victims beyond their control, and it becomes harder to be resolved, which makes victims suffer silently (Pettalia, Levin, & Dickinson, 2013). Women employees, in particular, develop a fear of letting others know since they have a consistent feeling of insecurity in them. The feeling of insecurity is more a psychological issue, and it increases their self-doubt, which often is trivialized due to organizational resistance to accept complaints from the victims since many of the perpetrators happens to be the employees of the organization (Boyd, 2014). This organizational resistance keeps cyberbullying on working women increasing consistently.

EVIDENCE OF WORKPLACE CYBERBULLYING ON WOMEN WORKERS

Technology has influenced the workplace (Hobfoll & Shirom, 1993) and has brought in innovative ways to conduct work (D'cruz & Noronha, 2013). Exposure to working related matters and other legal provisions required for workplace operations are known even to the women employees working in the lower hierarchy, which has elevated the thinking about work, and hence, managing women employees is getting cumbersome (Giumetti et al., 2012). Any aspect of the workplace has an upside, but it also has a downside, and, it is cyberbullying (Madan, 2014). The working population, especially women, who use digital spaces feel embarrassed quite often due to the menace of online abuse, and this abuse is put off by women easily while taking part in political or online debates (Perreault, 2011). Impersonation and exclusion occur by excluding or cruelly discarding someone from an online group to cause mental harassment in the victims (Gorgievski & Hobfoll, 2008; Hobfoll, 1989). Predators may continuously send emails or text messages to harass the victim, despite resistance, and they may repeat threats or sexual remarks to the victims (Matthiesen & Einarsen, 2007). Predators may also intentionally use pejorative labels (i.e. hate speech) or defamatory false accusations such as ganging up or ridiculing the person in online forums (Tuckey & Neall, 2014). The methods become very intensive after posting false statements with the fact aimed at discrediting (Tuckey et al., 2009), or humiliating a targeted person intentionally to destabilize the victim's self-confidence. Posting rumours about the victim to bring hatred in others' minds or to convince others to dislike or participate in online denigration of the target victim, often extends to the level of personally identifying the victim of the crime and publishing-related materials to defame and humiliate them (Finne, Knardahl, & Lau, 2011).

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Doxing is the publishing of private or identifying information about (a particular individual) on the Internet, typically with malicious intent, and this is another way to harass the victim by disclosing victim's data including their real name (Nielsen & Einarsen, 2012), home address, workplace address, and other data on websites or forums. Finally, they become an expert to even do impersonation by creating fake accounts (Hoel, Rayner, & Cooper, 1999), posting comments or creating sites to publish material in their name that defames, discredits or ridicules the victims (Balducci, Fraccaroli, & Schaufeli, 2011). The mode includes texts or instant messaging facilities through digital devices or platforms that have taken different shapes (Notelaers, De Witte, & Einarsen, 2009). With a recent rise in smartphones and apps, more accessible forms of cyberbullying have emerged (Skogstad, Torsheim, Einarsen, & Hauge, 2011). The cascading effect on cyberbullying happens when users in the social media, pass on the information negligently or with the assumptions that the requesting source is said to be true, based on information on what other users are doing (Harold & Holtz, 2014). The tendency to use users' previous interests is what is called information cascading and it occurs quickly over social media. Nevertheless, it may be harmless too, but the bullies can make use of these search engines, and use the term Google Bombs (a term applicable for any search engine), to get the favoured posts sorted out by the most popular searches (Schat & Kelloway, 2003). Cyberbullying that uses search engines makes cyberbullying more severe to the victims (Rhoades & Eisenberger, 2002).

PSYCHOLOGY OF WORKPLACE PERPETRATORS AND BULLIES HARASSING WOMEN EMPLOYEES

The psychological makeup of a bully is very complex, precise and subtle enough to mislead the victims (Ferris et al., 2007), and the organization that assesses them cannot identify any of the negative traits in them since they can exhibit a normal personality in public, including when they work or interact towards their victims (Hodgins et al., 2014). Bullies believe they can force their way in and can get what they want, and they believe that since they lack basic social skills. They cannot perform any of the tasks related to even official work without harming others and believe that only bullying coworkers or workers working under them can help them to establish their social status as well as dominance. Most of the time, bullies may have ulterior motives, or have the aim to inflict pain on others. The personality characteristics of the bullies are very different and varied, and research studies across countries like Scandinavia, England, Japan, Netherlands, Canada, and United States found that bullies are a special breed with a specific set of conditions that is available for threatening or intimidating a peer (Einarsen, Hoel, Zapf, & Cooper, 2011). Research studies from various parts of the world have found that bullies learn their aggression very naturally (Polzer-Debruyne, 2014), to define a person as a bully is very difficult (Perreault, 2011).

Olweus in the year 2012, in his research for developmental psychology, found three core elements of bullying involving a pattern of repeated aggressive behaviours with negative intent directed from one child to another (Privitera & Campbell, 2009). Olweus (2012) states that the bully's aggressive behaviour is intended to cause distress and the chronicity of bullying (Hobfoll, 1989), and this is one of its intriguing features. The need to dominate, derive satisfaction by injuring others is evident, and this occurs usually from a lack of prosocial skills due to never learning attitude skills or how to relate well with others (Gorgievski & Hobfoll, 2008). The bullies often do not feel anxiety, a very important emotion that disables extreme emotions, but anxiety can be a milder form of human restraint (Tuckey & Neall, 2014), which is present in a normal human being (Tuckey & Neall, 2014). The bullies avoid

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picking on anyone randomly, but rather they select their prey, as per the Toronto Psychologist, Debra Pepler states that they develop a relationship and relatedness over time (Finne et al., 2011). The bully starts with a glance and comment. This leads to setting up a terrifying sequence of emotions, like the anxiety, then the submissiveness signals to the bully that his or her aggression is working, and once victims are selected for aggression (Nielsen & Einarsen, 2012), the victims surrender to the attackers with submission. The other method is to pester the victim, and no two bullies do the same approach at any point in time (Hoel, Rayner, & Cooper, 1999).

Various aggression levels of bullies provide strong clues as to how aggression differs from one bully to another (Balducci, Fraccaroli, & Schaufeli, 2011). The bullies are out-and-out aggressive, and they do not need situations of conflict to set them off and are called "proactive aggressors" and "effectual aggressors" (Notelaers et al., 2009). The behaviour by these bullies is motivated by future rewards, like to obtain something, fulfill goals, and increase their arousal levels (Skogstad, Torsheim, Einarsen, & Hauge, 2011). They also do not possess any pro-social relationship. Schwartz found that aggression is a marker of every negative outcome that there is, and the bullies get locked into the patterns of aggressive and hostile responses with these rewards (Skogstad et al., 2011). The bullies often get outcaste from a normal lifestyle due to their hostile cognitive style of overt behaviour, and the ever-increasing contempt for the values of others (Harold & Holtz, 2014). Self-gratification, pro-sexual behaviour, drugging, and boozing usually are the habits that keep them busy, and their bullying social style drives their downward drift through life (Eisenberger, Huntington, Hutchinson, & Sowa, 1986). The women bullies usually involve in a subtle way than what men do. Their form of aggression is unique to girls and women, and it is usually termed as relational aggression, such as hurting others through manipulating relationships by spreading vicious and dangerous rumours in the peer group so that the other person rejects them. It can also include telling others to stop liking them to get even with their chosen person by trying to control or dominate a person using retaliation or social exclusion. The higher levels of bullying are threatening through the withdrawal of friendship, getting one's way to control another person's behaviour, or hurting someone via rejection, or using the exclusion of retaliation like removing their names from a party, etc. (Rainie, 2006).

HOW WORKING WOMEN CAN HANDLE THE BULLIES AND PREVENT THEMSELVES FROM BULLYING AT THEIR WORKPLACE

Women workers need to become more vigilant and use their intuition to safeguard themselves rather than relying on hearsay information about bullies. The bullies do influence the workplace very subtly (Hobfoll & Shirom, 1993) and they intimidate any victim (Hauge, Skogstad, & Einarsen, 2007). And, with women employees, they become more aggressive and severe (Leymann, 1996). It was found by Cillessen that group dynamics have a hidden purpose, and groups can fan the fire and keep the bullies and the victims fixed up in their roles, and carried away with a self-fulfilling prophecy (Polzer-Debruyne, 2014). The bullies often carry themselves with proactive aggression, by which if they make a women employee or any targeted victim feel pain, they feel victorious and it is self-fulfilling for them. Every small victory fulfills their ambition of being victorious with their aggression and it perpetuates in them, and this becomes their main self-fulfilling prophecy. Corrective actions do not heed to any actual correction in them nor can influence to change their thought process. Teaching victims social skills and assertiveness can evoke interest, but that alone is not sufficient (Van Laer, 2014). Hence, Madan (2014) recommends a few steps

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for working women. Some of the strategies include reporting the matter to their colleagues and taking proactive steps and taking the support of their immediate colleague or friend to control the aggression of the bullies (Gorgievski & Hobfoll, 2008). Preventive actions in the UK for the women employees include the legal prevention methods, which are the inception of the Malicious Communications Act of 1998 (Eisenberger, Huntington, Hutchinson, & Sowa, 1986). This act refers to penalizing offenders for sending indecent, offensive, threatening letters through electronic communication that under section 43 of the telecommunication Act 1984 (Harold & Holtz, 2014). The protection from Harassment Act 1977 also works against making repeated threats of violence, and it leads to imprisonment up to 6 months.

A joint policy on the bullying menace needs to be drafted for dealing with the complaints and procedures so they can be adopted (Hinduja & Patchin, 2007). The policy needs to address the unwanted behaviours at all levels. Also, the approach needs to recognize the fact that all people who bully are not malicious, or do so knowingly, as a disguised part of commanding at work to get results, and this needs to be understood clearly (Hertz & David, 2008). The policy shall be developed to take care of a statement of commitment, which demonstrates a clear commitment on the part of the employer to tackle the menace of bullying. The policy should be made clear to the public that any such issues will not be tolerated or compromised, and the staff needs to be treated with dignity and respect at work at all times (Ybarra & Mitchell, 2007). It shall place and state clear definitions that cyberbullying is deemed unacceptable to narrow down on the mistakes committed (Patchin & Hinduja, 2006). The framework of the policies is to be outlined in a very clear manner so that the employers understand it to be used for preventing workplace bullying (Duggan, 2017). The organizations need to take steps to reduce the factors that are catalyzing to workplace cyberbullying or bullying, like increasing stringent actions against bullying and creating a safe work culture with a clear expression of zero tolerance for workplace harassment, especially on women. A step to curtail shady management practices and unethical leadership styles is required at all levels in any kind of organization (Hertz & David, 2008). The policies on the duties and responsibilities of the front line working people need to be strengthened to take adequate precautionary measures to prevent bullying in an organization (Kowalski & Limber, 2007; Mehari, Farrell, & Le, 2014). The organizational policies related to work culture need to state the trade union involvement and issues on the safety-related matters of the organizations. Policies need to include members who can educate the aspect of bullying as well as dealing with the complaints of working women, especially related workplace harassment. The organization requires partnership from volunteer working people to be part of the team who can be part of building confidence among the staff (Mehari, Farrell, & Le, 2014). Setting up a hierarchy of contact numbers, offices with different officers, especially women officers for women workers is important, and it can yield results. All the women employees must be assured of confidentiality and mental support by encouraging them to come forward to complain about the workplace cyberbullying or bullying, since many times the workplace harassment like bullying or cyberbullying goes unreported. The workplace needs to have a very professional women grievance cell so that any women employee can freely discuss the matters related to her concerns to the counsellor without fear because it can reduce concerns about bullying. Finally, organizational procedures need to have a state of the art training programme with the help of occupational psychologists to demonstrate how to convey the information to concerned people on the issues of workplace cyberbullying. The policy related to the reporting structure of all the existing staffs needs to be brought to the attention of all kinds of employees with varying designations like contractors, agency staff, patients, clients, visitors and so on to make matters transparent on the procedures available and that can caution the bullies too (Berson, Berson, & Ferron, 2002). The legal provisions can throw light on the outside contractors to comply with

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the policy requirements. The organizations should make the policy statements amply clear and should contain all the contract specifications (Burgess-Proctor et al., 2009). Hence, the training program on related policies needs to be included in the syllabus of the training, and all the women employees need to be included in the training to make them learn to go against the issues of workplace bullying (Keith & Martin, 2005). Matters related to health and safety from the training induction of the entire staff will generate positivity to combat cyberbullying issues (Hinduja & Patchin, 2007).

The training program shall be tailor-made with the following prerogatives like the details of the policy and its purpose of implementation (Patchin & Hinduja, 2006). It can also state the reporting procedures and the mode of reporting to concerned higher authorities (Ybarra, 2004). It needs to train on the procedures that are to be followed for raising complaints on the bullies and any kind of workplace cyberbullying for taking up the grievance handling procedure immediately as per the organization policy, and in case the necessity exists, to go further to file legal proceedings against the organization too (Bartlett & Barlett, 2011). The policy also needs to implement the components of formal and informal procedures for dealing with the complaints of bullying and the opportunity for the change in the behaviours are to be made clear along with informal and formal procedures for dealing with bullying complaints (Nielsen & Einarsen, 2012). All the departments are to make an appropriate reporting system for representation (Rodriguez et al., 2015), and if the person being bullied and the alleged bully is from the same department or section, they cannot both be represented by the same person, and they both should develop an appropriate system for representing the bullying cases (West et al., 2011).

FACILITATING COUNSELING FOR WORKING WOMEN ON WORKPLACE BULLYING

Facilitating counseling procedures in organizations need to be very specific to provide remedial procedures for identified and deserving cases of workplace bullying (Baillien et al., 2011). Accessibility to counseling and related psychological help is a must for every victim of bullying since bullying can affect any person's mental and physical well-being, and it needs to help workers cope better with the stress of being bullied (Hodson et al., 2006). The access to an independent professional counselling service provided by the trained counsellors needs to be kept strictly confidential and the counselling procedures related to referrals needs to be included in the policy and publicized (Ferris et al., 2007). The vulnerable groups among the women shall be identified and appropriate counseling against the risk from bullying and harassing needs to be offered (Hinduja & Patchin, 2009). The risk is very high on the young workers, those with work experience, and with mental health conditions (Smith, 2008). At times, these bullied women have the chances of suicidal intentions, and at times may keep away from work or may suppress all the suffering due to high level of fear, anger, stress, anxiety and depression (Hu, 2010). The next initiative shall be estimating the likely chances of any other harm and taking preventive actions to avoid or reduce the risk (Chapin, 2014). The employers need to strategize by tackling measures like the level of psychological impact that can happen to the women employees and the risk, with the levels of harm that may come on them (Hinduja & Patchin, 2008). When the bullying goes longer, the greater will be the risk of harmful impact and the vulnerable women may not be in a position to cope with them and may suffer from serious harm (Diaz, 2016).

Another part of the measure shall be controlling the problem after it has occurred, however, this is not an appropriate strategy (Smith et al., 2008), rather the most appropriate measure will be to prevent

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cyberbullying from happening and reducing its consequences before anything happens (O'Keeffe & Clarke-Pearson, 2011). The measures could include providing information or training to the staff on the issues related to bullying, and clarifying what is acceptable as well as what is not (Ramasubbu, 2015). Improvising workplace culture and making a life of women workers shall be by taking proactive prevention measures (Pettalia & Dickinson, 2013). Recording and applying the findings related to cyberbullying on women in very critical for the employer, and an assessment needs to be done (Phillips, 2012), and it should have all the important findings and details of any group particularly at risk. Any other required step to prevent or reduce the risk of bullying needs to be applied (Görzig, Lara, & Frumkin, 2013).

The system needs to encourage mental support to seek support, and it needs to be clear with the counseling and rehabilitation of the victims. Additionally, it needs to include possible corrective actions on the bullies too (Kowalski, Schroeder, & Lattanner, 2014; Yang, 2013). This will be useful for the bullies to correct themselves if they are not aware of the chances for availing support from the organization (Sourander et al., 2010). The policy needs to be broad enough to accommodate any person to avail the facilitating factors associated with services giving mental support for the women workers, and since the social stigma does intervene (Einarsen et al., 2011). Also, women need to be counselled and encouraged to come forward to report and reinvigorate their self-confidence (Barlett, 2015).

CONCLUSION

The problems of workplace cyberbullying are manifold for working women in developing countries like India, which is an ever-ending part of behavioural research study for many researchers and organizations that are developing with a global vision. The ubiquitous presence of the Internet in recent years, especially in the workplace has indirectly influenced the act of cyberbullying; especially on the women employees, it has caught the attention of many researchers. The entire matter cannot be given in a single chapter, and it is not easy for any single side research to grab the intricacies inside the psychological problems that women undergo. The development of communication technology has augmented every kind of the workspace with digital platforms, which has improvised the speed and accuracy in the work but added certain work-life issues especially on women employees. Cyberbullying on female workers at the workplace generates negative implications related to the health of the victimized women, and with digital communication in place, this menace from the office is traveling with women to their home after work as well. The features of the executed methods of cyberbullying on working women through the digital devices like the smartphone, laptops, emails, texts, SMS, and other social media are readily available. Working women not only face this ill treatment during working hours, but face it through via email, and other social media platforms, and it occurs more than one time even in the method of status updates. Hence, now cyberbullying is considered a social epidemic. Workplace cyberbullying is an escalating process and often goes unrecognized by the victim. As it continues unabated by the victim due to helplessness, the intensity of the aggression increases and leads to many psychological hazards in the victim that even takes them to the level of committing suicide. Many such incidences have happened across the world, for which the statistical evidences are available at various authentic websites and peer-reviewed journal articles. The organizational culture and climate at times does contributes to increased workplace cyberbullying on women employees. The culture of cyberbullying as a social climate in the organization permits the escalation of workplace cyberbullying owing to perpetrators being not punished, or goes on without check, then the fear of coming to work increases in the victims, and it can even bring

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down the productivity of the organizations. Some of the prominent reasons include the lack of social support for the women employees in the organization. Across developing countries of the world including India, where the lack of social support is what is considered the highest risk factor, social support needs to be rectified. Strong, vibrant, and dynamic social support systems have authentic and powerful legal provisions to curb this menace and to control workplace cyberbullying across organizations around the world. Some of the other reasons that working women suffer more than others are due to being the minority at work, and even in the management positions, they have the chances of facing horizontal bullying, or in other words get cyberbullied by their own colleagues. The new workplace cultures and styles of working practices emerging from the digital communication influence such as direct connectivity in the networking sites are making cyberbullying effortless especially on vulnerable women employees. Considering workplace cyberbullying on working women as a social malice and as a new phenomenon, intensive research from all the professional organizations are needed. The legal provisions to support women development needs to be stronger and more stringent from any kind of infiltration. The laws enacted needs to be implemented expeditiously and diligently, to the existing power structures in the organizations across the developing countries, as developed countries have almost sorted that in their organization structures. The most important preventive measure for protection of working women is the framing of stringent anti-bullying provisions that supports women employees and that can ensure rights to challenge for women victims against the offensive behavior.

Every country can have a national plan for Equality, Gender, Citizenship, and Non-discrimination and raise awareness for workplace sexual harassment and other forms including the cyberbullying, including provisions of measures like setting up internal dispute resolution mechanisms to curb differences among the working members, and, rule regulations related to conduct of employees including the employment law provisions. The effective coping strategies included in the syllabus needs to be introduced, adopted, which also requires support groups composed of victims sharing their experience that evolves into a case study from which others can learn. Hence, conceptualizing cyberbullying in the context of working women across the world may protect women employees in the organizations.

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KEY TERMS AND DEFINITIONS

Cyberstalking: Kind of bullying that happens when any form of bullying or harassing with the use of electronic communication and it is used for threatening a victim.

Doxing: Is a kind of cyberbullying in the workplace or any place where the bullies search for and publish private or identifying information about a particular individual on the Internet, typically with malicious intent.

Hazing: Any action taken or any situation created intentionally that causes embarrassment, harassment, or ridicule and risks emotional and/or physical harm to members of a group or team, whether new or not, regardless of the person's willingness to participate.

Impersonation: A workplace harassment that the bullies use as an act of pretending to be another person for the purpose of entertainment or fraud.

Intimidating: Psychologically creating a situation to make the victim frighten or overawe (someone), especially in order to make them do what one wants.

Reactive Bullying: This kind of workplace bullying involves the bully responding to being a former victim by picking on others.

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Relational Bullying: One way of bullying in the workplace, when a working women is purposefully excluding someone of a peer group, usually through verbal threats, spreading rumors and other forms of intimidation that brings down the morale of women in work.

Work Ethic: These are the moral principles that are used in the job, the working people needs to use in their job which can be strong, weak or mediocre, which embodies certain principles of work culture that can guide the workers, and control worker behavior to a certain extent, and can lead to high quality outcome, and makes workers to be on track.

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Chapter 12
The Prevention of Work-Related Risks:
A Fundamental Principle for Organization With Purpose

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ABSTRACT

The goal of this chapter is to present how security and safety in the workplace, humanistic management, and humanistic psychology have become a fundamental pillar for the fulfillment of business objectives and the intervention on social and environmental issues, all the while recognizing human talent as the main axis for organizational development. For this purpose, the authors rely on two main axes: the first, the prevention of occupational hazards abiding by the guidelines established by different international organisms, including the implementation of governmental policies for the management of occupational safety and health in Latin America and mainly in Colombia; the second, the point of view of business administration, starting with their evolutionary process and leading to the new tendencies in administration such as B companies and businesses with purpose, all of which focus on an economy where success is measures by the wellbeing of people, societies, and nature.

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INTRODUCTION

Organization with purpose seek to redefine the meaning of economic success and wish to develop sustainable capitalism. These companies intend to be not the best in the world, but rather for the world, that is to say, for their stakeholders and, above all, for their employees, facilitating not only their development as people but also caring for their health and seeking their integral wellbeing. For this, it is necessary to intervene in the work environment, the characteristics of the task, and the administrative conditions, all of which are determinant to the health of employees. In general terms, people with a job are in better health than those without and good workplace conditions are associated with better levels of health and wellbeing, not only in employees but also within their families and in society as a whole (ISTAS, 2013).

The above is represented in companies that transcend the traditional version of management; rather than focusing on control and orders, they work on inspiring as well as redefining control, and passion for what is done (Largacha, 2019).

Organization with purpose work on and internalize the dimensions established by Largacha (2019) as follows: social impact and exclusive practices transcended traditional administrative and management practices and had a reflective attitude toward life and companies where dignity and authenticity are guiding lights. This is where the prevention of occupational hazards becomes important in the development of an employees' quality of life, framed in sustainable development goals number 3, Health and Wellbeing, and 8, Decent Work and Economic Growth (UN, 2015) as well as in the II Latin American Strategy for Safety and Health in the workplace 2015-2020 (OISS, 2016), creating purpose not only outwards, but toward the interior of the organization using its most important tool, human talent.

One of the instruments that allows companies to integrate the aspects described above is the management system for Safety and Security in the Workplace, which, according to the ISO 45001:2018 guidelines, is understood as the compilation of connected elements within an organization that interact to establish policies, objectives, and processes to reach these objectives. This management system is characterized by providing a method to evaluate and improve results in the prevention of work-related incidents or accidents through efficient management of the dangers and risks (ILO, 2011).

This chapter aims to establish that, for companies in general and particularly for those titled with purpose, it is of vital importance to assume dignity and human values as fundamental pillars, becoming actively interested in the development of each person's potential within the organization in order to generate a balance between mission, vision, objectives and caring for employees. This is achieved by understanding occupational health and safety (WHO) as a principle that looks out for the wellbeing of employees and, through this, giving solutions to current social and environmental issues.

METHODOLOGY

Several documentary sources were used to find bibliographic resources, developing a search in academic databases such as Scopus, ScienceDirect, Dialnet, Redalyc and Scielo; as well as a search using the "google academic" tool using the descriptors: Organizations with purpose, B corporations, Business Administration, Humanist Psychology, Humanist Management, Work Safety, and Work Health. The records obtained after searching with the different descriptors, ranged between 95 and 23. In the same way, an analysis of the evolution of standards related to health and safety at work in Colombia and at

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the international level was carried out, establishing features that accomplish as the basis for achieving the objectives proposed by Organization with purpose.

The development of this topic is sustained by two theoretical components: 1) Safety and Health in the workplace and 2) Business Management and Organization with purpose.

OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT SYSTEMS - OHSMS

Throughout many years profitability has been the main objective of businessmen and investors (Izquierdo 2016), who, through the management of administrative, productive, financial, technological, and market processes seek to shape an efficient productive system, where the human factor is presented as just one element more for the achievement of this purpose. This is how the interaction of human beings with these processes has generated working conditions that greatly influence the creation or risks that affect the safety and health of employees (ISTAS 2020). Therefore, the protection of employees has become a challenge for governments and institutions on a global scale (ILO 2019), all of which must address this issue based on a series of parameters and strategies within the field of occupational health and safety (OHS), with the goal of working for dignified working conditions.

OHS Global Context

Currently, working conditions are causing an impact with important accident figures: according to the International Labor Organization - ILO, on a global scale there are 374 million lesions every year caused by non-fatal incidents in the workplace and more than 2.78 million people lose their lives due to work related sickness or accidents. It is estimated that 1,000 people die every day in the world due to work related accidents and another 6,500 die due to work related illnesses (ILO 2019), implying economic costs due to missed labor days, interruptions in production, formation and reconversion of personnel, and medical expenses, amongst others; all of which may come to represent 4 to 6% of the global GDP and that, in turn, generate intangible costs related to the resulting human suffering (ILO 2020), The Federation of Colombian Insurance Workers (FASECOLDA by its acronym in Spanish), indicates that by the year of 2019, 655,570 work related accidents, 564 work related deaths, and 9,690 work related illnesses were presented in Colombia. Likewise, by the year of 2017, 189,112 work related accidents, 95 work related deaths, and 3,686 work related illnesses were reported in Bogota.

Since the creation of the ILO in 1919, a system of policies and guidelines has been established on a global scale, with the goal of improving the conditions of human beings by promoting decent labor and safe working conditions, thus constituting a frame of reference for other countries. Currently, this organization has 187 member states and its tripartite structure congregates representatives for governments, employers, and employees with equal voice and vote to discuss topics related to labor and share experiences through social dialogue to generate different action strategies from the technical, academic, political, and economic (ILO 2020).

For the World Health Organization (WHO), healthy workplace is defined as:

"...One in which workers and managers collaborate to use a continual improvement process to protect and promote the health, safety and well-being of all workers and the sustainability of the workplace by considering the following, based on identified needs:

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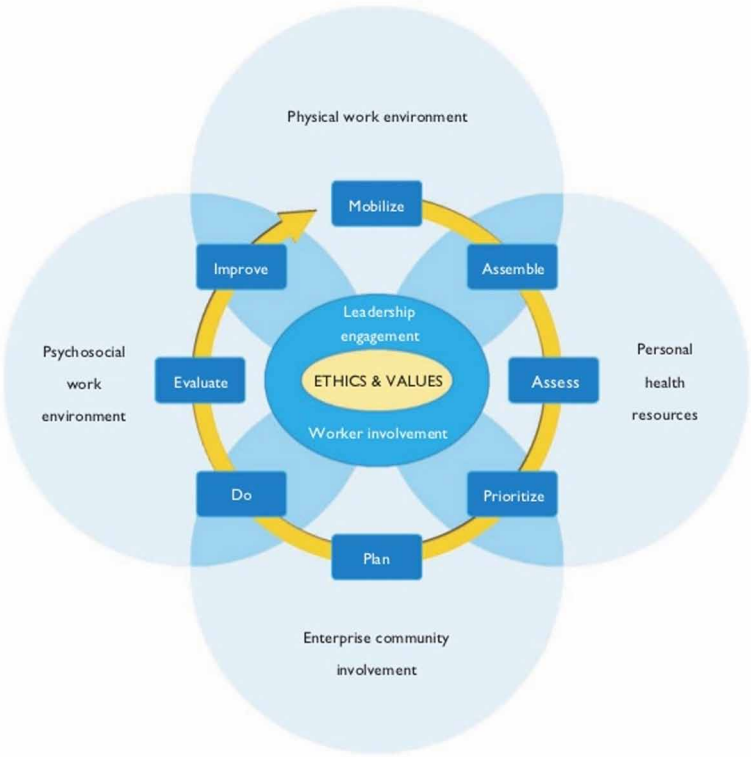
- *Health and safety concerns in the physical work environment;*
- *Health, safety and well-being concerns in the psychosocial work environment, including organization of work and workplace culture;*
- *Personal health resources in the workplace; and*
- *Ways of participating in the community to improve the health of workers, their families and other members of the community".*

For this purpose, the organization seeks to implement a model through flexible and adaptable theoretical frameworks in different countries where, through practical guides, it aims to reach sectors, companies, and cultures for the improvement of health in the workplace (WHO 2010).

Figure 1. WHO healthy workplace model: avenues of influence, process, and core principles
Source: WHO Healthy workplaces: a model for action



Another determining international parameter is that established by the United Nations when they formulated the Sustainable Development Goals (SDG), within which objectives 8 and 3 are raised and take into account specific topics related to decent work, health, and wellbeing (UN, 2015).

Likewise, on a regional level, the Pan American Health Organization (PAHO) considers that workplaces constitute a priority environment for the promotion of health, where productivity is favored equally to motivation and satisfaction in the workplace and, therefore, quality of life as a whole (Barrios & Paravic, 2006). On the other hand, the Latin American Organization for Social Security (OISS, by it acronym in

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Spanish), decided to adopt the Latin American Strategy for Safety and Health in the Workplace (EISST, by its acronym in Spanish), which is created as a possible strategy, adapted to the reality of the region and consensual in a tripartite agreement by governments, business organizations, and syndicates (Guzmán, Oceguera, & Contreras, 2017). It was elaborated in accordance with the Strategic Framework of the European Union in matters of Social Security in the Workplace 2014-2020; the Promotional Framework for Safety and Health in the Workplace by the ILO; the International Action Plan concerning the Health of Workers 2008-2017 approved by the WHO; and the Development Objectives of the Millennium beyond 2015; and has taken as a baseline the International Declaration of Human Rights; the International Pact for Economic, Social, and Cultural Rights; the Regional and Sub-regional Pacts (UN 2020).

Given the above, the OISS proposes that it is through this strategy that those interested in Safety and Health in the Workplace may have access to prevention and protection policies concerning occupational hazards and guaranteeing the continuous improvement of labor conditions.

Figure 2. Institutions that govern OHS on a global scale
Source: Own development

In Latin America, leading companies seeking a good reputation on a local and international scale with the goal of being socially responsible, have adapted important strategies related to OHS, starting from the basis of complying with requisites established by each country and by their own labor conditions. Due to this, constant challenged arise that must be surpassed in order to achieve efficient OHS management systems like the ones evidenced below in different countries:

The table above discusses different characteristics and points of view in Latin American countries, where the common element for the implementations of an OHSMS is that there must be commitment and culture from all business levels, particularly management. Likewise, it is highlighted that in order to achieve prevention of work related accidents and illnesses, it is necessary to consider OHS as inseparable to productive processes and responsibilities on a hierarchical scale, a fundamental aspect to achieve dignified labor conditions allowing for the fulfillment of objectives set by all the interested parties.

As a Latin American country, Colombia has been distinguished for generating a regulatory development, an administrative structure in OHS, and a series of strategies to transform the system of occupational hazards into something more fair, equal, and efficient (Min. labor 2020). This is how, through the participation of different actors of the OHS, such as the National Committee for Occupational Health and Safety, the academy, investigation centers, Labor Risk administrators, companies that promote

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health, government entities, sectors, employers, syndicates, and employees, the National Plan for OHS 2013 - 2021 was formulated, contemplating the alignments of international organizations as well as the particular needs in the country.

Table 1. Perspectives on OHS - methodologies

Country	Description
Colombia	Despite the fact that there is a legally approved OHSMS in Colombia, Vega-Monalve (2016) states that the reasons that do not allow for its fulfillment are related to organizations and may be surpassed if synergetic work takes place amongst the interested parties. It is established that, in order to incite the culture of safety in all levels of a company, the core change is based on the levels of commitment in the high management.
Cuba	Céspedes and Martínez (2016), completed an analysis on OHS in the Cuban business system and found that deficiencies due to limited systematic control are related to the lack of configuration within internal processes of the companies, given that the responsibility of an OHSMS falls on the person in charge of OHS and not on the businessmen and directors of the companies. This is due as well, in part, to low business culture.
Spain	Fernández (2006) proposes an organizational model in Spain that is focused on safety integrated in the productive process and the hierarchical levels of the company by conceiving labor safety as inseparable to the processes of production and its functions are transferred to the hierarchical line. It is considered that the organizational, cultural, and management elements have a crucial role in the causation of accidents and incidents, in detriment to technical factors.
Ecuador	Villacrés, Baño, and García (2016), a year after developing and applying a model for the implementation of an OHSMS, observed that the integration of the management system from hierarchical levels allowed the whole organization's comprehension of the raison d'être of the system and the impact it had on safety and the workplace environment. Likewise, this implementation allowed them to validate the procedures of the OHSMS and, finally, to improve the indicator of efficiency in the system at a general level, thus diminishing the index of occupational hazards.
Dominican Republic	Durán (2016), designed a model for the formulation of OHS programs in small and medium sized enterprises - SMEs; coming to the conclusion that there is a high cost involved in completely complying with the requirements of the OHS Program given the regulations in this country. It is shown in the analysis that the support of the government is focused on supervision and vigilance rather than in technical support for the prevention of occupational hazards.

Source: Own development

From this, four strategies are established:

- Promotion of Occupational Health and Safety as transversal to public policies.
- Strengthening Occupational Health and Safety on an institutional level.
- Strengthening the promotion of safety, health of employees, and the prevention of occupational risks.
- Optimization and warranty regarding recognition of benefits for the employee within the general system of occupational hazards

The aforementioned strategies are focused on promoting the structuring of OHSMS with the goal of achieving better results in the prevention of work related accidents and illnesses, working for dignified labor, health, and wellbeing.

The Occupational Health and Safety Management System - OHSMS in Colombia has markedly evolved in recent years due to regulatory changes that have Decree 1562 of 2012 —wherein the structure of the General System of Occupational Hazards was modified, transforming the Occupational Health Program, with a mainly documentary development, towards an OHSMS framed within a continuous

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improvement cycle— as a baseline (Gutiérrez and Malagón, 2017). However, all these legal, institutional, and administrative efforts have presented multiple challenges for their implementation, as evidenced by the low development levels of OHSMSs in companies and therefore in the true impact of employee health (Gutiérrez,. Ortiz, &. Malagón,, 2019).

The OHSMS is a logical process in stages that includes policy, organization, planning, evaluation, audit, and improvement actions (Colombia, Presidency of the Republic, 2015), and, according to the Single Regulatory Decree of the Labor Sector 1072 of 2015, a compilation of related elements that interact through a process based on continuous improvement that includes four phases: planning, doing, verifying, and acting designed to anticipate, recognize, evaluate, and control risks that can cause work related accidents and illnesses as well as the improvement of conditions within the work environment, all of which implies the promotion and maintenance of physical, mental, and social wellbeing of employees in every occupation, in such a way as to be able to complete their functions in accordance with the purpose of the organization and the society.

Risk management is one of the main activities for the coherent development of an OHSMS. Risk management is understood as the process of identifying the vulnerability of different populations (employees, in our case) before a threat and analyzing the possible consequences (Gómez, 2014). On a general level, risk management references methods and principles established for the control and prevention of risks faced by employees on a daily basis, given that they find themselves immersed in working conditions within which they go about their functions, conceiving these conditions as any aspect of the job that might result in negative consequences for health, which also includes technological and environmental factors as well as organizational work aspects (ISTAS, 2020).

Hereafter, we will describe the evolution that has taken place within business administration from its origins up to the concepts and new tendencies that are currently being developed on a global scale.

EVOLUTION OF BUSINESS ADMINISTRATION

Kootz and Weinrich (1998) have established that, since the origins of humanity, people have sought the formation of groups with the goal of reaching goals that are impossible to achieve on an individual scale. In this process, administration has always been of vital importance, given that it allows insurance that all efforts, resources, and activities will be developed in a coordinated manner in order to achieve the effective fulfillment of planned goals.

The term "Administration" has its origin in the Latin *ad minister*, where the **prefix** *ad* references "taking direction toward" or "tendency toward"; *minis* refers to "realizing a comparison" or "indication of inferiority"; and the **suffix** *ter* determines "a character of subordination or obedience". All of this indicates that the term, in its origins, signaled the function or activity that is completed under the instructions or orders of another. Additionally, the Latin term *ad manus* may also be cited as an origin of "Administration", given that it means to manage or operate.

However, the origin of the word that is now understood as Administration must not be understood merely by the literal definition of origin. All the synonyms that reflect or have a relation with the idea the term refers to must be taken into account (Torres and Mejía, 2006). Keeping this in mind, from its Spanish origins, Administration comes from the term *ministro*, which is derived from the term *menester*, which, in turn, descends from the Latin *ministerium* and is related to service, employment, or task to be completed; or the Latin *minister*, which means official server (Corominas and Pascual, 1984).

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From the studies specifically regarding the administrative area, Administration references the management of operative aspects in a company or organization and, if we keep the term's translation in English in mind, the interchangeable use of *administración*, *gestión*, *dirección*, and *gerencia* with the English terms Management and Administration.

From the study of Administration, the theoretical bases for Contemporary Administration come about by the end of the XIX century, motivated mainly by the need to find methods that responded to the organizational needs of the time.

The apparition of monopoly-type capitalism, in turn, lead to the increase of importance in Administration, generating an interest for the study of practical as well as theoretical issues in organizations (Domínguez, 1989).

Scientific administration also has its bases in the management problems faced by Administrators in the new industrial complex. The first approximations to administrative theories where divulged in the book The Cost of Manufactures and the Administration of Workshops, Public and Private, which is considered the precursor of administrative science (Calleja, 1990).

Throughout the first years of the XX century, administrative science originated the Classical School of Administration, which developed under the context of the complexity experienced by the industry in that time. Due to this, the focus of administration was ser on the simplification of tasks and complex activities, turning them into routine and standardized processes through the hierarchization of the structure of the organization, establishing supervision processes and achieving, thus, the improvement of results. Two different, but complementary, facets come out of that period: on one hand, Frederick W. Taylor's School of Scientific Administration and on the other Henry Fayol's Anatomic and Physiologist School. (García, 2009).

Thus, Ordways Tead's statements (Art of Leadership, 1935) begin to become popular and the interest for administration surges with a physiological focus, which developed an interesting focus on leadership in organizations (Chiavenato, 2001). Fruit of the pragmatism and based on the basic studies of experience and observation, with the goal of finding what is working in companies, the Empirical School comes to be at the beginning of the 40s. Its prime representatives were Peter Drucker and Ernest Dale (Marx and Hillix, 1974).

The crisis of the 30s in the XX century highlighted the importance of having organizations that are effective, provoking a complete revision of the core administrative fundamentals that had been considered dogmas and seen as pre-established thus far.

By the 50s the School of Structuralism was born, which carried with it a re-conceptualization of the elements of Bureaucratic Theory, characterized by being formal but keeping a sort of relation with the focus of the School of Human Relations, which had a more informal character.

In the first years of the 80s, Participative Administration is initiated, which brings the client to the center of studies, generating important innovation processes in all areas of an organization. Authors Peters and Waterman (1982) publish their work In Search of Excellence while Peters and Austin (1985) publish A Passion for Excellence, both of which focus on the challenge organizations face when responding to challenges and needs regarding changes in the environment (García, 2009).

In the 90s, organizations were transformed from pyramidal and hierarchical structures into structures that are more similar to flexible nets; as a part of this change, administrative functions were delegated to lower levels, obliging the high management to fulfill duties regarding organizational leadership. All of this was propelled by a need to be more flexible as well as more competitive in a more complex and dynamic competition (Payne, 1999).

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Reaching the close of the XX century and the start of the XXI century, human capital and knowledge have begun to dominate in production and physical capital is regarded as an important complement. Globalization has added new levels of complexity to decisions and, those that are capable of managing that complexity are more often individuals with a good administrative formation. In the world today, almost everything becomes obsolete at a surprising speed: business concepts, product designs, competitive intelligence, capital equipment, and every type of knowledge have increasingly diminishing intervals. Companies and individuals rarely triumph when they are static and attempt to live in the past. The era of industries with a poorly qualified labor force is over and we have entered the era of highly specialized industries, which implies that economic, individual, business, and national success depends on specializations.

Currently, we are living in a so-called Fourth Industrial Revolution (Revolution 4.0), which brings about not only new opportunities but also new challenges that must be faced. Big changes in production systems; new technologies that allow for the acquisition, treatment, and mass use of data; the internet of things; 3D printing; big data; artificial intelligence; collaborative robotics; and virtual reality are the fundamental advances upon which the new industrial model's development will pivot (Alfaro, Belloví, & Pérez, 2018). Parallel to the above, administrative models must continue their evolutionary process much like companies are realizing that success does not depend only on the accumulation of profit (Barroso, 2018) but on the contributions the company makes to the improvement of the environmental and social conditions of humanity.

Taking all of the above into consideration, the category of Organization with purpose, B Companies, or Companies with a B certification known in the U.S. as Benefit Corporation (B Corps) was created. These companies use the power of the market to give solutions to environmental and social issues through the development of solid administrative models, which allow them to increase the probability of sustaining themselves over a long period of time and managing risks in an efficient manner. A revision of 200 academic studies found that "86% of the sources revised establish that companies with practices geared toward sustainability and care for human resources show better operative performance, which eventually translates into cash influx; likewise, 80% of them show that these sustainability practices have a positive result in the performance of investment" (Benefit Corporation, 2020).

Organization With Purpose

According to the 2020 conference on conscious capitalism, there is a belief that business is good because it generates value, is ethical because it is based on voluntary exchange, is noble because it can elevate our existence, and is heroic because it brings people out of poverty and creates prosperity. Free Enterprise Capitalism is the most powerful system ever conceived for social cooperation and human progress. It is one of the most convincing ideas humans have ever had. But we can aspire to even more.

Currently, the realities of Society 5.0 which contemplates technological, economic, geopolitical and mental changes (Gallardo, 2020) and fourth industrial revolution make companies face different challenges, amongst them, technology; however, it becomes essential that these processes be oriented toward the strengthening and protection of the human being. This is how Organization with purpose are born, constituting themselves as an emerging phenomenon with the potential of pushing transformations toward sustainability and operating with high standards of management and transparency; these companies are known as B Companies, which propose transformational models that point towards a paradigm shift. The existence of a considerable number of companies that could prosper within this model will be a

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practical demonstration that the private sector may perform a constructive role in the solution of social and environmental issues (Correa, Abramovay, Gatica & Van Hoof, 2013).

B Companies

These companies were born in 2006 in the United States of America, where it is certified that businesses have the improvement of society as a goal. This movement that rose in the U.S. extended, later, to Canada, Latin America (known as B system), Australia, New Zealand, and Europe (where R4S is the main partner of B Corporations in Spain). It is now present in approximately 43 countries, 130 economic sectors, and 1,609 certified companies (bcorp, 2020).

Honeyman (2015) defines B Companies as a new market identity that is expressed through a collective brand, which creates public and common goods using the force of the market and maintains the goal of profitability while generating a positive impact in society by worrying about the interests of all partners, employees, providers, clients, community, and environment. B Companies are recognized by the slogan "Not only being the best in the world, but the best for the world".

According to the Sistema b movement (2020), the main compromises of B Companies are:

- Purpose: create a business model with a positive impact that outlines activities for the benefit of society and/or the environment along with high standards of compliance.
- Legal responsibility: starts with the company's statutes, where it defines a positive impact on society and the environment through specific responsibilities, which must be updated every two years when the B Corp certification is updated.
- Transparency: they must publish an annual report certified by an external and independent entity that endorses performance in diverse operative areas according to the business model that was proposed. Additionally, they must publish in their institutional web page the specific score received in each evaluated area.

The NGO called B Lab, headquarters in Pennsylvania U.S., is in charge of the certification process of B Companies on a global scale; however, given recent growth, it has required the help of sister organizations such as Sistema B (South America), B Lap (Europe), MaRS (Canada), and B Lab (Australia). The "B Corp" certification guarantees organizational sustainability, the company's commitment to comply voluntarily to elevated social and environmental standards through a self-evaluation related to governance, an environmental protection policy, attention to all employees, a relationship with the community and stakeholders, and an evaluation of the social purpose of the company along with its positive impact. Likewise, a certification implies the acquisition of commitments to transparency and the measurement of impact (compromiso empresarial, 2020). Of all the aforementioned standards, attention to all employees is highlighted, as they must be able to count on all the health and safety conditions to be able to be a part of productive processes and quality services that respond to clients' needs as well as social and environmental requirements.

In the words of Pablo Sánchez, B Corps coordinator in Spain (2020): "The B Corp certification becomes something like the seal of fair commerce, but for the company as a whole and not a specific product. B Corp values the totality of a company: that it is well managed, that it has an impact on society, and that it is a good corporation".

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Humanistic Psychology

The administrative processes and management strategies regarding human talent have been going through a large transformation that can be noticed whilst revising literature that refers to the evolution of humanistic psychology. Humanistic Psychology can be found starting in the 30s with Allport (1937) and Murray (1938), both of whom confronted behaviorism by conceptualizing personality and motivation as specifically human needs.

By 1940, the concept was reformed by Rogers with the use of new therapeutic tendencies for employees and Maslow with the theory of human motivation. Additionally, in 1950, Maslow expressed his 10 principles for self-realization. This is how the 60s saw the union of different authors under the label of "humanists", amongst them: Allport, Maslow, Murray, Kelly, Rogers, and May, all of whom believed in the union between humanism and scientific psychology (Smith, 1982).

In summary, Rogers (1986) states that humanistic psychology produces an impact in the socio-cultural spectrum, in learning, and in experiential knowledge. In this order of ideas, the pragmatic principles described by Buhler and Bugental reinvented for principles of Buda as follows:

- Focus attention on the person that experiences, in experience as the primary phenomenon of the study of man. Both theoretical explanations and manifested conduct are considered subordinates of experience itself and its meaning to the person.
- Emphasize specifically human qualities such as choice, creativity, assessment, and self-realization, as opposed to the conception of human beings in mechanistic and reductionist terms.
- Remain loyal to the criteria of meaning in the selection of problems and procedures in investigations, as opposed to emphasizing primarily objectivity.
- Commit to values and human dignity and become interested in the potential development inherent in every human. The core of this vision is the person as they discover themselves and relate to other people or social groups.

Humanistic Management

Humanistic management, which conceives the employee as the central axis, is one of the elements contemplated by new tendencies in administration and is characterized by business sensibility. According to Llano (2012), humanistic management is framed in four main principles:

- Gradualism: through observation and discovery, organizations must perceive the human reality described in a large variety of diverse elements, aspects, and nuances; wherein communication is essential before technique and what matters most is action and participation in processes.
- Complementarities: it is necessary to adopt new ways of thinking that are bases in sensitivities toward the plurality and diversity that defines current reality. By developing spaces for complementarities as well as proactively, synergy, collaboration, and solidarity practices the company generates gain for all involved through the active exercise of humble and appreciative communication that multiplies on the basis of respect.
- Integrity: developing intelligence processes that give way to management of the complexity of the human being by focusing the business vision on creative potential, emphasizing where the company aims to reach, with whom, and how.

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- Solidarity: business reality requires forms of interaction, coexistence, and interpersonal relationships that create favorable conditions to offer stability, solidity, and collaboration while enhancing the wellbeing of humanity and society.

Additionally, Del Grosso (2000) presents the need for close collaboration between organizations and interdependent human resources that promote development and mutual benefits. Thus, labor knowledge furthers experience, multidisciplinary abilities, and collaborative learning that share knowledge in strategic networks of information or communication, boosting opportunities. These actions generate constant learning, based on commitment, collaboration, and excellence, achieving the strengthening of creativity and innovation.

In this context, Melé (2003) presents the human condition as oriented to the development of all human virtues in diverse forms and extensions.

In the same vein, Pérez (2010) presents ethics as the element that strengthens the positive concept of humanity, holder of reason, goodwill, and a great capacity for collaboration in a context of personal and social development through interrelations created by the company in accordance with modes of labor and the values that intervene in decision-making.

According to Kimakowitz, Pirson, Spitzeck, Dierksweier and Amann (Humanistic Management in Practice, 2011), humanistic management is based on:

- Unconditional respect for human dignity, humans are perceived as a resource and not as an end to comply with tasks.
- Incorporating ethical aspects in administrative decisions, decision making based on respect for human values due to the individual's contribution to the achievement of organizational goals.
- Dialogic extension of a business ethical reflection, management of shared responsibility by the manager where spaces for argumentative dialogue are consolidated to give people a feeling of satisfaction regarding decisions taken.

In 2015, Novoa presented the three moments of study focused on humanistic management and recognized:

- Elton Mayo and Abraham Maslow, who focused their studies on human motivation for the achievement of better results.
- Deal and Kennedy (1982) and Shein (2001), presented the study of organizational cultures and their impact on business results.
- Melé (2003), who focuses his study on social structures, relationships, and a sense of unity as higher purposes and concrete objectives that mobilize society,

Gorrín (2017) defines humanistic management as the dignifying of the human being in business administration posts, entrepreneurships, and diverse groups. Additionally, he evidences the transformation of structures for the improvement of managerial processes, orientation based on competencies, knowledge management, mental models, team learning, and complete quality amongst the main ideas exposed by this author.

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Given the above, a clear posture from administration and humanistic management is recognized, which relates directly to the purposes of OHS, where the employee is conceived not as a resource more for the achievement of goals, but rather as a human being with potential, creativity, and expectations that can be developed in the best way via granting the possibility of developing their work in dignified work environments.

RECOMMENDATIONS

It is fundamental in the development of Occupational Health and Safety Management Systems to have considerations related to humanistic management and humanistic psychology as bases within organizations, keeping in mind that for both of those ideologies the employee is the center of attention as it should be for any OHSMS, given its primary objective of guaranteeing safe and healthy working conditions that lead to the prevention of work related accidents or illnesses.

Thus, Organization with purpose or B companies may execute their intentions of intervening positively on the environment and society; in other words, the external sector. However, it is fundamental that these companies maintain an introspective vision of their own work conditions, concerning themselves not only with the interests of their partners, providers, and clients but with their human talent, ensuring the provision of a dignified working environment, without which corporate sustainability and success would be difficult to obtain.

Regulations should exist in different countries to incite the effective intervention of labor risks as well as the creation of organizations with purpose, given the benefit that these generate for employees, their families, society in general, and the planet.

CONCLUSION

Knowing the relationship between the principles of safety and health at work and the objectives established by companies with purpose, mechanisms must be developed to promote their appropriation by all organizations, focused on the well-being of its workers and the solution to social problems and environmental all together.

Taking the theoretical concepts exposed above as a starting point, a high level of interrelation between B companies, humanistic management, and humanistic psychology and risk management and safety in the workplace is evident. This, keeping in mind that humanistic psychology is based on the behavior of the employee, on the unconditional respect for his/her dignity, and in conceiving him/her as an active and integral part of business decisions. On the other hand, humanistic management appears as a medium through which this human talent may be administered while maintaining the consideration of it as just that, a human being. Understanding the potential, experience, and initiative of human talent makes it possible to achieve goals and, what is more, the improvement or solution of environmental or societal issues that affect communities.

B Companies aim to work for an economy where success is measured by the wellbeing of people, societies, and nature (bcorp, 2020). Companies that follow this philosophy obtain benefits such as: continuous improvement, diffusion, recognition, knowledge exchange, talent attraction, and possibility of sales to other B Companies, amongst others. Likewise, the businesses that implement OHSMS in

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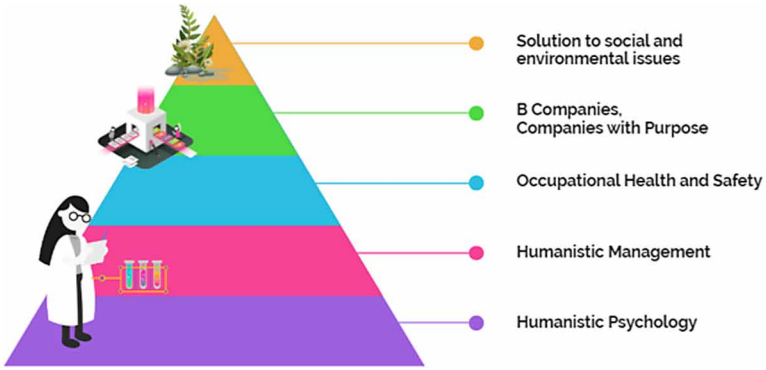
a conscious manner have the possibility of obtaining economic benefits sustainable from the perspective of the social responsibility of the business (Silva, F., 2016). This is how these initiatives represent advantages to businessmen that develop them in their organizations, but they require high levels of managerial commitment.

Figure 3. The employee as a base for organizations with purpose
Source: Own development



Cifuentes, Blanco, Gutiérrez, and others (2017), through a diagnostic of the development in OHS in large private companies in Bogotá, Colombia, found that 79% of organizations implement risk management systems oriented toward accomplishments complimentary to the OHSMS such as, maintaining institutional image, ensuring the continuation of the business, preventing economic losses, and complying with regulations. Thus, companies relegate the fundamental principle of these management systems, the protection of the employee, to an afterthought; they take prevention as a marginal and discretionary responsibility that depends on the goodwill and solidarity of managers, taking it on reactively in the case of work related accidents or illnesses. Zamora (2011), demonstrates that, in many cases, the implementation of this type of initiatives —such as prevention of occupational hazards and the intervention in environmental and social needs— arise more as the consequence of coercive and regulatory actions by the countries than as the conviction of a company that believes in the benefits as Organization with purpose do.

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Section 2

Development and Design Methodologies

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Chapter 13
The Positive Face of Human Capital, Psychological Capital, and Well-Being

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ABSTRACT

This chapter analyzes the relation between Positive Psychology, Psychological Capital, and Well-Being. Positive psychology pursues information that flourishes on life. Positive psychology improves the quality of life and investigates the paths towards positive individual characteristics and developing communities through actions that increase well-being and prevents discomfort in situations where life is vicious and meaningless. Psychological capital is associated with many positive results for employees and the organization and promises to increase productivity in today's workplace. In this chapter, the transformation of positive psychology into the concept of psychological capital is explained in the field of organizational behavior, and the state of well-being and psychological capital are examined from a theoretical perspective. Besides, it is explained how psychological capital improves employee wellbeing. Psychological capital and well-being are very effective concepts on employee workplace performance, and there are strong relationships between them.

INTRODUCTION

Today's organizations need resources to differentiate themselves from other organizations and provide a sustainable competitive advantage in an increasingly competitive environment. So, traditional approaches no longer suffice in creating sustainable sources of distinct advantage (Kraaijenbrink, Spender, & Groen, 2010). The resources and capabilities of an organization include all the financial, physical, human, and organizational assets that an organization uses to develop, produce, and deliver products or services to its customers. Economic resources include debt, equity, retained earnings, and similar resources. Physical resources are machines, production facilities, and buildings. Human resources include all experience,

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knowledge, judgment, risk-taking, and wisdom of individuals associated with the organization. Organizational resources include the firm's formal reporting structure, open management control systems, and compensation policies, as well as the history, relationships, trust, and organizational culture that are the characteristics of groups of people associated in a firm (Barney, 1995: 50). The most crucial resource in the field of organizational management is human capital and Unlike traditional financial capital and tangible assets, social capital, positive psychological capital can be developed at relatively little monetary cost (Luthans et al., 2004).

Organizations derive their competitive advantage from organizational culture, history, and routines that are difficult to emulate, beyond financial or strategic tools. Today, physical and organizational resources can be copied and imitated by benchmarking and "me too" strategies. Information technologies, which have been the primary source of competitive advantage until today, have reached the same level in almost all companies with decreasing costs and reverse engineering. These developments indicate that traditional sources of competitive advantage are no longer sustainable (Luthans & Youssef, 2004).

Psychology has long been fascinated by the dark side of human existence. During this period, psychology students were given necessary information about human weaknesses, and the pathology model attracted the attention of young, creative minds that shaped the academic and applied branches of psychology. In this process, negative psychology was accepted and studied, and until the last half of the 20th century, psychology made a limited contribution to understanding human virtues (Snyder & McCullough, 2000).

The American psychologist Martin Seligman is seen as the founder of today's positive psychology movement. A few years after Seligman were elected President of the American Psychological Association (APA); in the early 2000s, the APA published a special issue on positive psychology. Within five years of the publication of this special issue, a movement called the positive psychology movement emerged. Along with this trend, many publications, special issues, and books on positive psychology have been published. Conferences bringing together researchers from many parts of the world have been organized, and many aids and awards have been created to facilitate the work of young researchers. Positive psychology courses started to be given in universities and high schools. Those interested in positive psychology have been amazed at how quickly this train is progressing (Gable & Haidt, 2005). Seligman and Csikszentmihalyi (2000) defined the goal of positive psychology as to focus on psychology, to stimulate a change that focuses on creating positive qualities rather than just repairing the worst things in life.

Positive psychology is a discipline that focuses on developing positive traits of individuals, having positive experiences, and preserving their mental health through programs that increase their subjective well-being. Positive psychology has attracted the attention of researchers since the 2000s and has become a positive psychology trend. Under the leadership of Seligman, the well-known research-oriented core group such as Ed Diener, Christopher Peterson, Rich Snyder tries to direct the goal of positive psychologist psychology to focus on the strengths rather than focusing on weaknesses, improving and enhancing well-being instead of focusing on weaknesses in humans (Luthans et al., 2007b) . Positive psychology aims to improve the quality of life, to investigate paths to positive individuals and developing communities through actions that improve well-being, and to prevent discomfort in situations where life is barren and meaningless (Seligman & Csikszentmihalyi, 2000).

Positive psychology has evolved into two interrelated movements that are positive and power-based management practices in the workplace. The first is Positive Organizational Science (POS) (Cameron et al., 2003; Cameron & Caza, 2004), which is based on the efforts of University of Michigan's academics to maintain a positively focused presence that can be measured, developed and managed to improve performance in the workplace in crisis and adverse conditions. The second movement is the Positive

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Organizational Behavior (POB) applications of Luthans and colleagues (Luthans, 2002a, 2002b; Luthans and Youssef, 2007; Luthans et al., 2007b; Wright, 2003), which investigate the human resources power and psychological capacities in today's workplace. Although this definite emphasis on organizational behavior has traditionally been based on the theory-building process and research methodology, it is a research initiative with a positive psychological resource capacity specific to the workplace (Luthans & Youssef, 2004). The two approaches complement each other. POS focuses on macro and organizational levels, while POB focuses on micro and individual levels. While POS works on constructs such as compassion and virtue with or without an impact on development and performance, POB works on state-like, developable and performance-impact constructs.

In addition to empirical studies with a solid theoretical background, self-help books devoid of adequate research have addressed this magical concept and spread it to all parts of life and thus business life. Luthans (2002a, 2002b) stated that a more positive approach to organizational behavior was needed, and he expressed this understanding as POB and carried positive psychology to work. POB is defined as the application and study of positively focused, psychological capacity, and human resources that can be measured, improved, effectively managed to improve performance in the workplace. What distinguishes positive organizational behavior from other positive approaches is its concentration on measurable and developable psychological capacities. Positive psychology found its equivalent as POB in the study of organizational behavior and defined as a concept that can be measured and developed within the core structure of psychological capital (Luthans, 2002a, 2002b). In management research, it has been empirically determined that psychological capital is associated with many positive outcomes in terms of employees and organizations. In this context, the development of psychological capital is a positive human-resource capital that is underway and studied with its potential components. Avey et al. (2010) provide that PsyCap may be a positive resource used to enhance employee well-being.

In this chapter, the relationships between positive psychology, psychological capital, and employee well-being are explained theoretically. Economists historically have treated psychological capital as both unobservable and unmeasurable, heretofore little evidence has been available on the contribution of psychological capital and well-being to real economy and, hence living standards (Goldsmith et al., 1997).

In line with these theoretical relationships, it has been demonstrated that productivity and many more organizational positive results will be achieved by improving psychological capital and well-being(Jessica Pryce-Jones, 2010).

PSYCHOLOGICAL CAPITAL?

Psychological capital is defined as studies and practices on the strengths and emotional capacities of human resources to improve the performance of work environments. Although a standard economic theory takes no account of feelings, emotions do matter. They affect your investment, effort, and therefore, your output too (Pryce-Jones, 2010). Psychological capital, open to change and development, is relatively unique in the field of organizational behavior (Luthans, 2002b).

Psychological capital has four components. They are defined as (1) to make the necessary effort to succeed in challenging tasks; having confidence (self-efficiency) (2) making positive references to succeed now and in the future (optimism) (3) determining towards goals and finding new ways to achieve the goal when required (hope) (4) endurance and flexibility to achieve success when surrounded by difficulties and challenges (resiliency) (Avey et al., 2008). Luthans and colleagues (Luthans et al.

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2007a) found that the four psychological capacities (hope, efficacy, resilience, and optimism) with a synergetic effect formed a higher structure (Psychological capital). Psychological capital has more effect than each of its component on the positive results obtained in the workplace. Psychological capital is a human-resource power that can overcome the challenges of today and the future with its openness to development as a high-level positive structure with four components. The theoretical foundations and research of each of the four components contribute to the development of an integrative academic basis for psychological capital.

Although there are different concepts, there is considerable synergy between psychological capital, human capital, and social capital. For example, individuals with high self-esteem and self-confidence are more successful both academically and at work and develop healthier cultural relationships (social capital). Healthy social relationships (social capital) increase the value given to himself (psychological capital) (Cole et al., 2009).

Hope

The hope dimension of psychological capital was mainly imported from the research, theory, and literature of the positive psychologist Rich Snyder (1995, 2000, 2002). Hope is defined as the ability to motivate oneself with the thought of using the paths to produce the right paths to the desired goals (Snyder, 2002).

In formulating the theory of hope, Snyder (1995) began with the assumption that people are often target-oriented. People act to achieve something. As Snyder describes, there are two dimensions that makeup hope. Agency-perseverance /determination/willpower and Pathways-planning ways to achieve goals (Snyder, 1995: 355). Hope, which is defined by these two dimensions, differs from the expression of hope which we frequently use in our daily lives as a psychological capacity of psychological capital.

Hope is a positive motivational state based on a sense of success derived interactively with the agency (goal-oriented energy) and pathways (planning to achieve your goals) (Snyder et al., 1991). Hope is a cognitive state in which an individual can set realistic but challenging goals and expectations and reach these goals through self-directed, energy, and internalized control perception. The primary element of hope is the positive expectation of achieving the goals considered as achievable in the individual (Snyder et al., 2006). Hopeful employees are creative and resourceful individuals who can think independently. Hopeful workers may appear problematic or risky when viewed superficially. Such employees are successful entrepreneurs.

Self-Efficiency

Self-efficacy is an essential concept in Bandura's (1977) Social Learning Theory (Social Cognitive Theory). The concept of self-efficacy was imported from Bandura's (1977) comprehensive research and theory into psychological capital. Self-efficacy is an individual's belief in their ability to activate their motivation, cognitive resources and to take the necessary actions within the conditions given to carry out a particular task successfully (Stajkovic & Luthans, 1998a: 66; Wood & Bandura, 1989: 408).

Perceived self-efficacy is not about what an individual has, but about what decisions an individual can do with what she has. An individual's lack of ability to cope with difficulties reduces fears of perceived self-efficacy (Bandura, 1983). Self-efficacy is also the belief in the capacity of individuals to produce the desired level of performance that can influence the events that affect their lives. Self-efficacy determines how individuals think, feel, motivate, and behave. These ideas produce different results through

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four main processes. These results include cognitive, motivational, emotional, and selection processes (Bandura, 1994).

The determinants of self-efficacy are obtained from four primary sources: performance accomplishments, vicarious experience while watching, verbal persuasion, psychological and emotional arousal (Bandura, 1977). Applying performance accomplishments to the practice, by performing challenging tasks, increases the belief in self-efficacy. The employee learns from his past performance and increases his next performance. Vicarious experience is the learning of the worker while watching qualified people in the social environment. Verbal persuasion is the strengthening of the self-efficacy of the employee by someone whom she considers to be competent. By increasing the talent and ability of the employee, his belief in himself increases. Psychological and emotional arousal be an energizing factor in the effective working psychological arousal while reducing excessive stress performance (Stajkovic & Luthans, 1998a, 1998b).

While individuals avoid activities that they think are above their capacity to struggle, they are loaded and do activities that they can achieve (Bandura, 1977: 194). Self-efficacy theory argues that when individuals perceive that their inability to perceive their effectiveness in coping with events will cause fear, they can give control over events that may have harmful consequences, fear is eliminated. This perception of control reduces the pressure on performance expectations to be shown in the face of events (Bandura, 1983: 465). Self-efficacy affects individuals' choices in important decision-making moments. By choosing the environment in which they are located, they determine who they will be. The idea of self-efficacy can determine the life in which an individual will live (Bandura, 2008).

Optimism

Like hope, optimism has been theorized as both characteristic and psychological capital conceptual infrastructure. Seligman (1998), the pioneer of positive psychology, explains the developmental nature of optimism with the concept of "learned optimism." Optimism is a tendency to mediate between external events and the individual's interpretation of them. There are cognitive, emotional, and motivational components of optimism. Optimistic individuals tend to be physically healthier, more successful, more determined, and in a better mood (Seligman & Csikszentmihalyi, 2000). Optimism is a positive expectation of future success. Optimists tend to process events and results differently from pessimists. Although the optimists do not consider themselves fully responsible for the outcome of an event, they see any difficulties or failures temporarily and expect a right exit again in the long run. Optimists concentrate on the external causes of negative experiences; they do not perceive results from personal character flaws or weaknesses.

Psychological Resiliency

In a certain but straightforward term, psychological resilience is the capacity of positive psychology, defined as difficulty, uncertainty, conflict, failure, even stretching after positive change, recovery, increased responsibility, and development. As a component of psychological capital, psychological resilience is an individual's ability to deal with a significant change, problem, or risk successfully. Today's managers and employees resist the fast-changing and stressful work environment with psychological resilience (Luthans, 2002a).

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Psychological resiliency is defined as many cases classified as good outcomes despite threats and improvements to adapt. Research on psychological resilience is about how good results emerge. Psychological resilience does not arise from rare and special qualities, but from the magic of mediocrity, the normative sources of the brain and mind of the individual, the body of the individual, the family, relationships, and society. Psychological endurance includes daily skills and psychological forces that can be defined, measured, maintained, and fed in individuals of all ages and psychological conditions. Psychological resilience is explained according to the results and the reasons for these results (Masten, 2001).

When the biographies of leaders around the world are examined, it is seen that despite the failures, they do not give up the goals they are trying to achieve for themselves, their organizations and the whole society. Leaders such as Nelson Mandela, Mother Teresa, Winston Churchill, and Abraham Lincoln have demonstrated their capacity to recover in the most unusual situations. A concept of positive psychology, psychological resilience, is to move a little further as a component of psychological capital, beyond just recovering from stressful situations, to go beyond normal and equilibrium at the end of highly challenging events (Luthans et al., 2007b).

WHY PSYCHOLOGICAL CAPITAL?

Psychological capital has a positive relationship with desired attitudes and a negative relationship with unwanted attitudes. Those with high psychological capital except that good things will happen at work (optimism), believe that they will produce their success (hope, self-efficiency) and are more resistant to difficulties (psychological resiliency). This is the most basic mechanism explaining the effect of psychological capital on working attitudes (Avey et al., 2011).

Concentrating and accumulating traditional resources, such as economic, financial, advanced technology, and patented information, which was once vital for the success of organizations, are insufficient to achieve sustainable competitive advantage. Compared to traditional physical, structural, and financial capital-based approaches, human capital-based types provide more important opportunities for organizations in terms of competitive advantage and return on investment. This approach makes human capital more valuable. Today, for sustainable competitive advantage, it is necessary to turn to content-specific, cumulative, renewable, and difficult to imitate resources. In this context, investing, developing, and managing psychological capital will provide competitive advantages to organizations.

DEVELOPMENT OF PSYCHOLOGICAL CAPITAL

Today, while global competition is increasing, investment in human resources is increasing in order to keep up with this competition. The return of these investments should be analyzed. Within the framework of the theoretical foundations of psychological capital components, a scale has been developed, which provides valid and reliable measurement of psychological capital. (Luthans et al., 2007b). Psychological capital is a core concept that creates a more significant impact than its constituent components. It has been found that the training to develop each component show a synergistic effect and further develop psychological capital. It is claimed that a 2% increase in the level of psychological capital can generate

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an annual income increase of more than $ 10 million, based on the Forbes middle-class top firm data, based on the formulas used in human resources today (Luthans et al., 2006; Luthans et al. 2010).

Psychological capital development training is based on a human capital-based perspective, with the dimensions of hope, self-efficacy, psychological resiliency and optimism, techniques and programs used in clinical, developmental positive psychology, and tried and actual human-resource development techniques such as goal setting and group learning processes and exercises (Luthans, 2012: 3). It has been proven that psychological capital can be developed through a short web-based training program that includes focused and short-term training to provide a positive performance development for the business.

The positive internal conversation is encouraged in the process of developing psychological capital. Focusing on the objectives, creating the paths to the target, and overcoming the obstacles will be emphasized. Emphasis is on how these processes will be implemented in the workplace. These studies raise the level of hope of the participants (Snyder, 1995, 2002; Luthans et al., 2006).

In developing self-efficacy, the participant learns and model success by acting by seeing the group members experience success as well as experiencing success in the goal-setting process. During the training process, participants become aware of their values and learn how to use them in case of difficulties. The training process focuses on teaching the participants how to avoid the obstacles and risks that they may face now and in the future (Bandura, 2008; Luthans et al., 2008).

Self-efficacy and hope studies also improve the dimension of optimism. It is suggested that optimism can be improved by changing the pessimistic descriptive style or by enriching the optimistic descriptive style dimensions. To develop realistic and flexible optimism, three perspectives are presented: satisfaction for the past, satisfaction for the present, and opportunities for the future. Satisfaction about the past does not mean rejecting events or avoiding responsibility. On the contrary, it is a positive re-drawing technique that accepts the realities of the situation in line with realistic optimism. It adopts a problem-centered coping approach to reposition the uncontrollable aspects of the situation in the best possible way towards the controllable aspects of the situation. In the perspective of satisfaction for the present day, it is possible to reflect the positive aspects and benefit from the positive aspects, no matter how negative the situation. One should learn to be satisfied with the positive results despite the difficulties. If the employee acknowledges that her unit and organization are making progress, she is not only satisfied for the present but also the future with all opportunities and optimism (Snyder, 2000; Luthans et al., 2007b).

Development of psychological resilience focuses on changing and improving the participant's perception of cognitive, emotional, and behavioral processes. Strategies focused on the three main components of resilience; asset factors, risk factors, and impact processes are targeted. In asset-centered strategies, the aim is to focus on increasing the level of human capital (good education, experience, knowledge), social capital (networks, relationships) and other positive psychological capital components (optimism, hope, self-efficacy, and psychological resilience) that can increase the likelihood of positive outcomes. Risk-centric strategies focus on avoiding what appears to be risky to avoid unwanted consequences. For example, although an actual event appears to be promoted, in some cases, it can be seen as a high-risk, very intense and repressed situation. In this case, the risk-centered strategy may be to reject the promotion. Another risk-management strategy to suit this situation may include a developmental approach based on increasing self-efficacy in the new impact area after promotion. Impact process-centered strategies are based on identifying, developing, and implementing a mix of appropriate asset factors to manage risk factors (Masten, 2001; Luthans et al., 2007b).

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WELL-BEING

Well-being is related to cognitive processing of events and situations, perception and emotional explanations, rather than actual conditions and coincidences (Youssef & Luthans, 2007). The individual acts with neither an autonomous factor nor a situational effect; the well-being of the individual is a product of the interaction of personal, environmental, and behavioral factors. These three factors serve to become an individual's WB (Bandura, 2008). Well-being is acknowledged as umbrella-like contexts, which is working under the roof of positive organizational behavior and psychological capital. Well-being embodies psychological well-being, subjective well-being, and workplace well-being. It is suggested that well-being can be applied to many parts of life and measured over these areas. Well-being tends to be seen as a potential component of PsyCap, can be developed and measured. (Diener, 1984; Luthans et al., 2013).

Well-being is a subjective experience; the individual is as happy as he believes to be happy, positive effects are more than adverse effects, and well-being is a general assessment of life. Positive well-being is the affective and discerning reaction shown to positive progress in time of the perception of adequate personal traits and performance, strong interaction with the world, and social integration. Negative well-being can be expressed as a cognitive and affectional response to perceived deficiencies in the subject areas. Positive well-being includes elements such as life satisfaction, positive mood and energy, Negative well-being distress, negative mood, and extreme arousal (Karademas, 2007).

POSITIVE PSYCHOLOGY AND WELL-BEING

After the Second World War, the science of psychology, which focused on eliminating the deficiencies in human psychology, started to build positive capacities in addition to eliminating the deficiencies by changing direction with the positive psychology trend. The study of psychology on extremely negative concepts has led to the omission of positive concepts that make life meaningful and livable. Positive psychology has assessed that an inefficient and meaningless life is the cause of various pathologies and has initiated a change that focuses on having positive qualities rather than attempting to change the individual's negative aspects. In this context, the area of interest of positive psychology is expressed in three levels as subjective, individual, and organizational. At one of these three levels, subjective level (valuable subjective experiences), well-being, satisfaction and satisfaction (in the past), hope and optimism (in the future), flow and happiness (in the present) is studied. One of the concepts of this approach is well-being (Seligman and Csikszentmihalyi, 2000). In this context, positive psychology focuses on both subjective well-being, in which hedonistic approaches are concentrated, and psychological well-being, on which functional (edamonic) approaches are concentrated.

Positive psychology contributes to too many disciplines while continuing its development. Fred Luthans (2002a, 2002b), who introduced the concept of psychological capital under the umbrella of positive organizational behavior, acknowledged the importance of psychology, sociology and other basic behavioral sciences, but stated that mental disorders and dysfunctional behaviors were studied too much and that there was not enough research on well-being (Youssef-Morgan and Luthans, 2015). Well-being of the employees can be improved, which is also related to positive psychological skills according to psychological capital (Manzano-García & Ayala, 2017).

The interest in well-being in organizational studies is increasing. The main reason for this is the fact that western society has reached a certain level economically, which leads individuals to search for a

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better life just by moving ahead of the idea of survival. People have become interested in the quality of life beyond a life of prosperity. Besides, well-being is becoming popular because it is a democratic concept. Respects how individuals look and feel their lives. The important thing is the evaluation of the individual's own life; there is no point in evaluating an individual's life. Also, the increasing tendency of individuality plays a role in the popularization of the concept, as the individual's self-assessment is central (Diener et al., 2012).

The hope of the sub-dimensions of psychological capital reflects the motivation of an individual to conceptualize goals, develop strategies to achieve these goals, and use strategies. Hope, working and many positive organizational results can be associated, one of these positive results is well-being Snyder (1995, 2002). Werner (2012) found a positive relationship between well-being and hope and suggested focusing on developing hope to improve well-being.

High self-efficacy increases well-being and success. Instead of avoiding strenuous tasks, individuals with high self-efficacy capacity see them as a challenge to be overcome. Such an effective perspective provides superiority in activities and provides immediate recovery after failures. Workers approach threatening difficult situations with self-confidence that they can influence. This overview reduces stress and the harmful effects of depression and produces success. Individuals with low self-efficacy quickly believe that any attempt will result in failure and will stop experimenting. Belief in self-efficacy determines the level of stress and quality of emotional life of an individual. An individual who believes in the competence that he will recover quickly after difficult situations return to the well-being more quickly (Bandura, 1994, 2008).

HOW DOES PSYCHOLOGICAL CAPITAL WORK ON WELL-BEING?

Positive psychological capital includes self-efficiency, hope, optimism, psychological resiliency. Many theories and research support psychological capital because it is an emerging issue and its relationship with positive outcomes on an individual and organizational level. There is an increasing awareness of the importance of the well-being of employees in achieving the desired results of today's organizations. Today, exceptional performance rather than the average performance of the employees is expected for competitive advantage. Well-being can also improve the performance of the employee. Organizations that understand the importance of a positive approach and well-being will be able to achieve these results. It is considered that psychological capital can increase the well-being and positivity of employees and increase their performance to an exceptional level. PsyCap can present a unique approach to leveraging employee positivity and well-being toward that exceptional level of performance. Unlike the narrower focus of the more problem-oriented psychological and organizational research, positivity also emphasizes a broader, whole-person perspective, which is particularly relevant to well-being (Youssef-Morgan1 & Fred Luthans, 2014). Bonding and maintained social capital could play the crucial mediating role in shaping users' perception of well-being (Hua, 2018).

Positive organizational behavior and psychological capital express a rigorous theory of rigorous research and valid metrics, unlike unproven and anecdotal, personal development literature. Similarly, well-being researchers empirically research to distinguish their scientific work from extreme perspectives such as Pollyannaish positivity and hedonism. This concept model links psychological capital and well-being in the context of evidence-based research and practice and meeting controlled standards (Youssef-Morgan & Luthans 2015).

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Both concepts are similar in that they are research-based and developable workforce capacity and provide positive improvements in working and organizational performance and outputs. Besides these similarities, it helps us to understand the relationship between variables in some conceptual frameworks better.

A person's predispositions, assessments, memories, goals, and motivations are tools to increase the impact of positive events. This positiveness buffers the effects of negative events. In other words, positivity gains more importance on life satisfaction and general well-being than actual life events and conditions (Luthans et al., 2013: 119). While psychological capital increases constructive emotions, it reduces destructive emotions and buffers, thus increase well-being.

Well-being is primarily shaped by cognitive and emotional evaluations of life, events, and conditions. Well-being manifests in individual behaviors and gives concrete results at many levels of analysis. The working principle of psychological capital and its components is to create a positive assessment of past, present, and impending events. Optimism, positive reading of the past, self-efficacy, psychological resilience, and hope support motivation, effort, and prospective goals for the present. When psychological capital factors interact together, these positive assessments provide a higher state of well-being (Bakker & Oerlemans, 2011; Youssef-Morgan & Luthans 2015; Diener et al., 2012).

The second conceptual framework builds on the mediation, stretchability, and social mechanisms of psychological capital, extending the role of psychological capital to health and relationships beyond the workplace. Each segment of life affects the other. Satisfaction from important areas of life is an integral component of well-being. Life satisfaction from the workplace, relationship, and health areas lead to general well-being.

The basic principle of the theory of conservation of resources (Hobfoll, 1989) is that individuals strive to protect, build, and maintain their valuable resources against the threat of potential or real loss. Cognitive assessments of resource availability are used as indicators of well-being. The well-being of the individual depends on the acquisition and protection of these resources. In this context, it is a psychological resource in psychological capital, and its protection improves its well-being. This connection is consistent with Fredrickson's (2001, 2002, 2003) theory of "Broaden and Build". Psychological capital creates a pool for psychological resources and is used to deal with difficulties and negativities. Refreshing resources with the development of psychological capital balances and optimizes positivity and negativity, leading to higher well-being.

WELL-BEING AS POTENTIAL PSYCHOLOGICAL CAPITAL COMPONENT

The expression of psychological capital with four components in the researches does not mean that these four concepts represent all of the psychological capital factors. The enriching research and knowledge in the field of positive psychology offer new individual, group, and organizational forces and virtues as a potential psychological capital component. Many of these positive structures appear to be highly promising both in terms of their theoretical basis and potential applicability in the workplace. It is considered that the potential components of psychological capital will direct future psychological capital studies.

In most of the last century, psychology focusing on improving psychopathology has overshadowed the promotion of well-being and personal development. However, starting from the 1960s, a change began to take place, and when researchers found that financial security and luxury did not provide happiness

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for those who were economically advantageous, positive psychology, well-being, and the growth and development of human potential became more noticeable and studied (Ryan & Deci, 2001).

In a study conducted on 7204 people from 42 countries, when individuals were asked what they wanted most in their lives, happiness was the leading answer (Diener, 2000: 34). The search for happiness, combined with avoidance of unhappiness, is considered the basis for human motivation. The basis of many theories of motivation is the belief that people seek pleasure and avoid painful things (Sullivan, 1989).

Aristotle said that the greatest result that people can achieve as a result of their behavior is happiness (eudaimonia). Diener (1984) states that the translation of the word eudaimonia may be more accurate as of the accompanying of emotions that are compatible with the actual potential of the individual. Here, Aristotle underlines the individual's real potential realization.

Being happy does not just make you feel good; happiness is good. Happy individuals have more solid marriages, stronger immune systems, and more creativity than less happy individuals. Studies show that there is a strong relationship between success and happiness. The aspect of this relationship is not only that success produces happiness, but happiness produces success (Lyubomirsky et al., 2005). Happiness means many meanings. When we define an individual as happy, we mean at least two things. First, happy individuals tend to feel positive emotions more than unhappy individuals. Second, happiness is a general concept, and being happy expresses satisfaction from all life. Concepts such as wealth, happiness at work, peaceful family life are just a few of the many components of happiness (Wright & Cropanzano, 2004:254). Happiness becomes operational in four ways as job satisfaction, presence of positive effects, lack of negative effect, lack of emotional exhaustion, psychological happiness on the worker. Some of these effects have significant relationships with the performance of the worker, while others do not. Positive and negative effects, lack of emotional exhaustion, and psychological well-being (increasingly present and predicted future direction) are noteworthy. More specifically, although there is a reasonable consensus on the conceptual definition of happiness (Diener, 1984), there is less agreement on operational definition (Cropanzano & Wright, 2001; Davis-Blake & Pfeffer, 1989).

From the studies conducted in the positive psychology research literature, it is estimated that objective life events and conditions (including demographic variables) have a 10% effect on happiness. Life events include being rich or poor, healthy or unhealthy, being married or single. Genetic susceptibility is thought to have a 50% effect on well-being. Conscious activities determine 40% of their well-being. These activities are the sections that we determine with our choices. With this perspective, 40% of well-being is open to development and growth (Lyubormirsky, 2007). Conscious changes in thoughts and behaviors can increase happiness rapidly (Lyubomirsky & Layous, 2013).

Well-being is often used with happiness. Although there are many definitions of happiness, well-being in the academic world, psychological well-being (self-acceptance, purpose of life, environmental dominance, autonomy and positive relationships with other people, personal development), emotional well-being (positive and negative effects, life satisfaction and happiness), social well-being (social acceptance, realization, acceptance, consistency, integration), physical and mental well-being is used as an umbrella concept (Youssef-Morgan & Luthans 2015). Ryff (1995) states that well-being is not only an achievement of pleasure but an "effort for excellence that represents the realization of the individual's true potential."

In ancient civilizations, well-being was seen as a value and ideally, the most valuable asset to be possessed in life. Well-being means not only an end but a continuation of the development of society and civilization. Today, health is not only seen as diligence and productivity but also as a major source of growth and development of the abundance of the nation (Keyes, 2006).

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Diener (1984) suggested that the definitions of well-being and happiness can be grouped under three groups. The first of these definitions are normative definitions that consider the state of well-being as an external criterion, sacredness, or virtue. In these definitions, it is emphasized that the state of well-being is not based on subjective thoughts, but has a desired set of qualities. In the second definition, the factors that cause the individual to define her life in positive terms are pointed out, and the cognitive definition including life satisfaction and the evaluation of life as a whole is adopted. The third group is the experience of positive and negative emotions and the emotional definitions that emphasize the time interval in which these emotions are experienced.

There are positive structures (eg creativity, wisdom, prosperity, fluency, humor, gratitude, forgiveness, emotional intelligence, spirituality, originality and courage) There are positive structures that have not received the attention they deserve in the literature of organizational behavior and these structures need further study (Luthans et al. 2007b). One of these structures is well-being.

Well-being is related to cognitive processing of events and situations, perception, and emotional explanations rather than actual conditions and coincidences (Youssef & Luthans, 2007: 783). The individual does not act with either an autonomous factor or a behavior determined by a situational effect, but the individual's well-being and skills are the product of the interplay of environmental, personal and behavioral factors. These three factors serve to the individual's well-being (Bandura, 2008: 11).

Bradburn and Caplovitz (1965) suggested that well-being can be demonstrated in two dimensions by being under positive and negative effects. Well-being is expressed as the balance between these two effects.

Positive and negative aspects of well-being are interrelated but two independent structures. Positive well-being, perception of adequate personal traits and success, strong interaction with the world, and social integration are the affective and cognitive responses to positive progress over time. Negative well-being can be expressed as a cognitive and affective response to perceived deficiencies in these areas (Karademas, 2007).

Well-being is studied under the framework of psychological capital. Although happiness and well-being are often used interchangeably, well-being is an umbrella concept that includes psychological well-being, subjective well-being, and workplace well-being. Well-being is the presence of positive effects, absence of negative effects, absence of emotional burnout, and psychological well-being (Wright, 2015). Well-being is a multidimensional phenomenon that includes both hedonic and functional (edamonic) well-being (Ryan & Deci, 2001).

Well-being is one of the working topics of positive organizational behavior in the context of working and workplace predecessors and successors. Positive organizational behavior and psychological capital are concerned with well-being. Unlike self-help or self-help books based on anecdotes and unproven claims, research on positive organizational behavior and well-being of psychological capital focuses on a solid theoretical background, rigorous research, and valid criteria. The relationship between positive psychological capital and well-being has been demonstrated by previous studies (Avey et al., 2010; Avey et al. 2011; Luthans et al. 2013; Çelik et al., 2014, Roche et al., 2014). In this context, well-being in psychological capital literature is seen as a potential psychological capital component. Well-being is a concept that can be developed and measured. It is suggested that well-being can be applied to many parts of life and measured over these areas (Diener, 1984; Luthans et al., 2013). The development of well-being also has many positive returns for the working and the workplace, as in psychological capital.

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FUTURE RESEARCH DIRECTIONS

Organizational behavior aims to understand and direct the behaviors that work by blending the information obtained from many disciplines due to its nature. Organizational behavior researchers work with complex and exploratory aspects of human psychology. The well-being and psychological capital that improve the productivity of the employee, the understanding of the positive psychological resources, and the interaction between them will bring many positive results in the context of the working and organization. In this context, some suggestions for researchers are given below.

Although it seems like an acceptable hypothesis in the first place, the fact that the state of well-being will increase as the increase of the financial opportunities provided to the employee, there is no causal path to the relationship between income and well-being (Diener et al., 1999). In the study, a similar result was obtained, and the low-income group had higher well-being. In this sense, the advancement of financial means alone is not sufficient. Organizations need to find different ways and methods to improve well-being. The study of other potential positive psychological capital structures by researchers will contribute to the literature.

Today, psychological capital development training are not differentiated according to demographic variables. It should be noted that groups with unlike characteristics may have different educational needs. In this context, it is worth examining how psychological capital differs between demographic variables, what differences mean, and whether psychological capital training can be transformed into different programs in the context of demographic variables.

Studies to improve well-being practices will contribute to enterprises and organizations. It is suggested that psychological capital and well-being should be investigated in other positive results where business and organizations are precursors.

CONCLUSION

Up to this section, the theoretical relations of positive concepts such as positive psychology, psychological capital and well-being have been examined and suggestions have been made to improve employee well-being.

Psychological capital, the third generation of human and social capital, is associated with many organizational behaviors that offer a competitive advantage to organizations. Positive psychological capital and its sub-dimensions are promising structures for businesses and organizations. The understanding of these structures by today's managers, professional support when necessary by developing the positive and strong aspects of employees and psychological capital to be raised along with the increase in the well-being of the employee and many more positive results will bring.

There are positive structures with high potential for future incorporation into positive psychological capital. These dimensions are positive, theoretically based, measurable, developable, and meet positive psychological capital criteria because they are related to performance. One of these structures is the state of well-being. Further research is needed to incorporate these concepts into positive psychological capital components.

Today's organizations that struggle with ethical problems, financial crises, and intense global competition do not only increase human and organizational resources with those who work with high positive psychological capital in this context but also survive and survive in this current stormy environment

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(Avey et al., 2012). Rather than thinking of employees as a tool of organizational productivity, the mission of positive organizational behavior should be in pursuit of improving employee well-being, happiness, health, and working conditions (Wright, 2003). Psychological capital and optimism, hope, self-efficacy, and psychological resilience have positive effects on employee well-being. Developing each aspect of psychological capital will also increase the total well-being of the employee by increasing the total psychological capital by making a synergistic effect.

In essence, methods of developing each psychological capital component are emphasized. The methods and diversification of psychological capital that provide opportunities for organizations and businesses to offer a unique competitive advantage is a broad and imaginative issue worthy of research.

Psychologists, personal development specialists, and parents work to make their customers, friends, and children happy. However, most individuals have higher levels of happiness than neutral, and this raises the question of whether higher levels of happiness have a more effective function than lower levels. Analyzes examining large survey data and long-term study data show that individuals with higher levels of happiness are successful in close relationships and voluntary work, but those with slightly lower levels of happiness are successful in income (Oishi et al., 2007). It is suggested that higher levels of happiness may not be a desirable goal and that psychological well-being is more important than higher levels of happiness.

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KEY TERMS AND DEFINITIONS

Hope: Ability to motivate oneself with the thought of using the paths to produce the right paths to the desired goals.

Positive Psychology: Discipline that focuses on developing positive traits of individuals, having positive experiences, and preserving their mental health through programs that increase their subjective well-being.

Psychological Capital: Studies and practices on the strengths and emotional capacities of human resources to improve the performance of work environments.

Psychological Resilience: Individual's ability to deal with a significant change, problem, or risk successfully. **Optimism**: Individual's positive expectation of future success.

Self-Efficacy: Individual's belief in their ability to activate their motivation, cognitive resources and to take the necessary actions within the conditions given to carry out a particular task successfully.

Well-Being: Subjective experience; the individual is as happy as he believes to be happy, positive effects are more than adverse effects, and well-being is a general assessment of life.

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Chapter 14
Microfinancial Collaborative Economies Business Models and Strategies for Quality of Life Improvement:
Case studies for PROMUSAG and UBER

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ABSTRACT

The present chapter analyzes two cases of a joint venture stage to determine the successes and failures undertaken by the PROMUSAG and Uber as a model and strategies of collaborative economies to improve the quality of life. First, it is analyzed PROMUSAG as a program to finance women entrepreneurship aimed to improve the quality of life and the second case aims to analyze the different strategies taken by Uber to join the global market successfully, positioning itself in different countries. The analysis concludes that the empirical knowledge of entrepreneurs, in this case were not sufficient to direct the business to success, and that the lack of structured knowledge and adequate scientific support for this project strongly directed towards the non-permanence on the market. Taking terms as work global, it is considered Uber as a technology-based company and sees it from an overall, same strategy refers to a strategy that follows the company having a worldwide standardized product, another issue that would revise the importance of the theory of institutions.

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INTRODUCTION

The Mexican government through the Ministry of Agrarian Reform supports rural entrepreneurship projects. One way is PROMUSAG (program for women in agriculture). This is a support program for rural women entrepreneurs, seeking their integration in the productive sector to earn income to help in the fight against poverty in this rural environment. The support consists of a sum of money to start up the business to undertake, which is repayable, but it is considered at lost funds. In 2009, hundreds of projects have benefited from PROMUSAG, one of which has been analyzed for this report. This case is featuring nine women in the municipality of San Martin de Hidalgo, Jalisco. In that year, nine women was PROMUSAG order required for each project. The team for this project consisted of women with little or no preparation in business, but the team had a leader with knowledge and skills acquired empirically that gave the project some routing to success. PROMUSAG central requirements requested to be eligible for funding to the various proposals were teams of nine members, all participants should be female, a project to undertake the business detailing emphasizing the distribution of grant money, it is sent to be developed by an engineer in the agricultural area and the last requirement was to have an area of land sufficient to carry out the purpose of the enterprise activity. The venture was marked by the fall in leader's illness, which conditioned the project to a resounding lack of profitability, this, coupled with the lack of scientific preparation and support scientists generated a mismanagement of resources and capabilities that had the project, bringing this to its final termination in six months.

For decades the transfer of people from one place to another in large cities has been using public transport, taxis, or those with better economic position and resource allows them to move in their own car. That was the traditional way going from one point to another, but with the different changes that occur in society today, technological, economic or related to the environment issues have been marking new ways of moving from one point to another. These new forms also have to do with issues of passenger safety, comfort and other factors.

As a result of these new ways of moving emerges UBER, which for several years start to mark a new trend in moving people from one point to another, especially in big cities around the world. It has its origins in a revised class concept of Strategic Management as it is born global that refers to those companies that are born in global or international markets and are marking a new trend in the way of doing business, taking advantage of the technological changes that have occurred in the world in which today we live. This company considers having a relationship with the technological-based firms that are characterized by being innovative, enough reason to learn more about the same as it was able to study from approaches such as the theory based on institutions and global strategy.

Uber has its origins in 2008 as it tells the story in its page when Travis Kalanick and Garrett Camp could not get a taxi in Paris, which led to an idea to create an application where with just one button, could have a trip. What started with this simple idea is now changing the way people are transported in large cities? According to the Uber definition, it is the smartest way to move and luxury at low cost.

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THEORETICAL BACKGROUND

Entrepreneurial Ventures and Life Quality

Quality of life is considered as the set of factors which contribute to the general well-being of people in terms of personal satisfaction with happiness, health, safety, intellectual and cultural preferences, financial security, family life, job satisfaction, etc. Quality of life has been defined as the level of satisfaction with an individual´s conditions, relationships, and surroundings relative to the available alternatives (McGregor & Goldsmith, 1998).

The Business Dictionary defines quality of life as "Daily living enhanced by wholesome food and clean air and water, enjoyment of unfettered open spaces and bodies of water, conservation of wildlife and natural resources, security from crime, and protection from radiation and toxic substances. It may also be used as a measure of the energy and power a person is endowed with that enable him or her to enjoy life and prevail over life's challenges irrespective of the handicaps he or she may have…" Quality of life has different manifestations, ranging from improvements in health, standards of living, education, work life, etc. Quality of life can be described as a multidimensional phenomenon that cannot be reduced to a few quantitative indicators. Explanations of quality of life include psychological, social, political environmental, economic, issues. Quality of life profiles or analysis of the correlates are different only in the emphasis of the human development approach to social welfare.

Existing concepts of quality of life are wide enough to overcome multidimensional social concerns such as exclusion and poverty explanations that cover much the same territory. However, the improvement in the provision of social services to a specific community or to a specific segment of population, can raise the indicators of quality of life of that society, but fail to deliver services in geographically remote areas or to socially disadvantaged groups as an unfocused goal. The consensus that narrows measures of consumption and quality of life is inadequate and a broader view is needed. Economists concerned with quality of life recognize the importance of income and consumption derived from sources provided by the State, social and private sectors. There are some policies and synergies contained on this approach to quality of life. Economic growth may increase the living standards, benefit the quality of life and reduce poverty. The approach to income and the level of consumption as a quality of life can be criticized when having access to resources by other means. A case is the improvement of the social services, education and health provisions, etc., and taking advantage of opportunities offered by the growth of safety groups and social networks.

The best known of these influences on improvement on quality of life as national welfare strategies derived from postindustrial growth, state structures and economic geography. This institutional welfare state approach focuses more on the content of policies, more universal and less directed social programs at target groups, the requirements to be eligible beneficiary and the quality of the services. These welfare programs benefit the quality of working life and employment, rather than social spending. Thus, it improves the societal quality of life. Societal quality of life is defined as the general state of well-being experienced by society's members (Morris & Lewis, 1991). However, the decline in the terms of quality of life and socioeconomic characteristics of the working class as well as the dismantling of the welfare state, are taking place already.

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Entrepreneurship has been found to have an impact on life quality (Morris, 1998b; Pennings, 1982; Sirgy, 1985). The relationship between entrepreneurship and life quality is being studied by the family and consumer sciences focusing on societal and environmental trends (American Association of Family and Consumer Sciences, 2004; Horridge & Craig, 2001; Key & Firebaugh, 1989; Kim, Sharpe & Kim, 2002; McNabb, 2004). Morris (1998b) contends that entrepreneurship has an impact on quality of life dimensions. The perception level of the entrepreneurial efforts has a significant impact on dimensions of quality of life. Entrepreneurs' quality of life and a positive perception of impacts on their families, customers and community sustain their business. Thus, lifestyle entrepreneurship benefits family´s quality of life and community development (Marcketti et al., 2006). Peters, Frehse and Buhalis (2009) continue the analysis of the relationship between entrepreneurial quality of life and tourism business growth. The quality of life perceived motivates and sustains lifestyle and economic status more than growth. Entrepreneurs may be emotionally motivated by their families and quality of life more than workload factors depending upon individual wants and characteristics and personality traits (Marcketti et al., 2006).

Peters, Frehse and Buhalis (2009) have analyzed the relationship between entrepreneurial quality of life and profits and have derived some propositions. Life quality and leisure time decrease determined by entrepreneurial factors during the time of financial risks and expectations for establishing the new business. Lowering or heightening quality of life expectations may be necessary to meet the profits requirement despite that the lifestyle entrepreneurship may have positive effects.

Social Entrepreneurs contribute to enhance the well-being and quality of life (Baden, 2006). Social entrepreneurship at national business system level has an impact on the societal quality of life. At regional/national business system level, social entrepreneurship improves the objective and subjective indicators the quality of life. Social, organizational and individual interactions and complex inter-organizational relationships at regional/national business system have an impact on quality of life (Koponen, n.d.). Small businesses are formed to improve quality of life conditions by meeting the family's needs and demands (Brush, 1992; Stanforth & Muske, 1999). Social entrepreneurship contributes to the general well-being and societal quality of life balancing social change and social capital in a certain regional or local level. The model of Koponen (n.d.) proposes that the objective parameters of quality of life are sustained on social entrepreneurship, considering social value vs. market mechanism which in turn is the base of business model with its value proposition and exchange. The dimensions of quality of life are the social, material, physical, productive and emotional quality of life. Entrepreneurship has an impact on quality of life economic, physical and mental health, social, technological, job satisfaction, institutional, and ecological dimensions (Morris, 1998b; Rice, 1985).

The objective parameters are the numbers, percentages, total sums, etc. The subjective parameters are the society´s experience, opinion, social norms, traditions, etc. These objective and subjective parameters have social and business effects on the general well-being, the national business system, social capital and change. The economic model of any society is related to the improvement of a societal quality of life (Jordan, 2008). However, there is no unified conclusion on how to achieve a greater level of quality at local, regional or national levels. Few studies have examined the relationship between lifestyle entrepreneurship and life quality (Henderson, 2002; Mhango, Marcketti, & Niehm, 2005; Scarborough & Zimmerer, 2003). From the systems theory, perspective lifestyle entrepreneurship bridges with quality of life. Lifestyle entrepreneurship has an impact on life quality for individual small business owners, their families, and communities. Successful lifestyle entrepreneurs enhance the perception of a better quality of life driven by a mindset and values affecting their families, customers and the community.

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Life quality of the business owner perceived as an entrepreneurial venture may provide quality of life to employees, consumers, and the community.

Still it is not clear how to measure entrepreneur's quality of life and the effects on new ventures. When creating a new venture, the entrepreneur's quality of life may lower while workloads increase by many personal barriers, worries and financial risks (Shaver et al., 2001; Weiermair & Peters, 1998b) until he reaches a breakeven point where both qualities of life and profits are maximized. As a consequence of this new venture that entrepreneurial effects on quality of life may be positive, although sometimes when creating a new venture, individual quality of life may start to decrease. After lifestyle entrepreneurs reach this breakeven point, they diminish activities and depending of several variables of life quality, their effects start to decrease and to become negatives. The, the lifestyle entrepreneur does not have economic motivations and hinders growth. Although he contributes to economic welfare (Weiermair & Peters, 1998a) he does not lower quality of life.

An exploratory study conducted by Marcketti; Niehm, and Fuloria (2006) found a relationship between lifestyle entrepreneurship and life quality for business owners, families and communities involved. Also, some elements of entrepreneurship such as creativity, innovation, and personal life experiences have long-term effects on the life quality of business owners, their families and communities.

Despite that quality of life is a relevant factor for the location of new business; it is one of the most neglected by policymakers. However, regional variables have an impact on entrepreneurial decisions and policy makers on quality of life, although some variables cannot be controlled such as the impact of weather and geography on quality of life. Quality of life is a livable factor that attracts business and individuals (Endeavor Insight, 2014; McCann, 2000; Pennings, 1982). However, quality of life is not always the main factor in deciding to start a business.Many of the policies that address these concerns at local levels that link quality of life to economic growth may lead to the central dilemma. This dilemma can be represented on an advanced society that may be opposed to materialism. The elevation of a post-industrial expansion of quality of life is related to multi-site decision making on well-being. Also, it is related to a long tradition of social, political and economic welfare policies as much attention to subnational spatial conditions of the economic policy and market geography, rather than simply eliminating territorial influences make them relevant in new ways.

Quality of life is an intangible and subjective variable difficult to measure objectively because individuals have different priorities. The quality of life (QOL) index is an objective measure compiling a variety of objective factors ranging from life expectancy, public education, public safety, recreation, etc. to the share of childhood welfare and poverty. The level of entrepreneurship has a causal effect of the societal quality of life. Morris and Richard J. Lewis (1991) examine the relationship between entrepreneurship and societal quality of life. Morris and Lewis (1991) identified seven quality of life dimensions in terms of costs and benefits produced by entrepreneurship: economic, health, social, technological, work, institutional, and ecological. For example, they found that entrepreneurship may have a positive effect on the ecological dimension of quality of life.

Research has shown that there is significant correlation but not perfect within specific regions. Comparison of QOL measures on regional bases can correlate entrepreneurial decisions and quality of life. Quality-of-life variables can explain new-business formations across the regions, although may not indicate causation. All these variables contribute to increase the standard of living that influence entrepreneurship, new business startups, and decisions of local policymakers. A high quality of life means that people get increased power. The decline in the terms of quality of life and socioeconomic characteristics of the working class as well as the dismantling of the welfare state are being shaped by the advance of

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economic globalization processes and the deepening of capitalism that benefit from the intensive exploitation of labor. From a public management perspective, it is intended to view government from the bottom up focusing more on quality of life and work in public organizations and seeking to understand and improve organizational elements such as leadership, strategic management, organizational climate, service quality, innovation, performance and customer satisfaction.

Quality of life has been related to satisfaction with management decisions regarding individual goals, physical and emotional improvements and betterment of self, family and community (Edwards, 1991; McGregor & Goldsmith, 1998; Morris, 1998a). Decision-making and management may result in satisfying outcomes and better life quality. The human development index is an indicator of a set of minimum values of the quality of life of a person, such as his educational, health, economic and other. The first concern is with human services agencies being established which provide care, money, education, shelter and support to people, often with significant personal interaction between the agency and the individual client user. A high quality of life for people is the goal of sustainable development. Policies fostering the post-industrial growth have focused increasingly on the economies of cities and regions, and sub national elites have emerged as sectors in these policies. At the same time, space policies explicitly targeted the urban environmental problems with a main impact on local quality of life in general that has proliferated conditions. Especially in the post- industrial urban arrangements, local social movements and parties regularly mobilize people around these concerns on a better quality of life. Women employment contributes to improve the overall quality of life through the formulation of more sustainable development policies.

To determine the relationships between entrepreneurial motivations and realities and the enhancement of quality of life is important to consider for a comprehensive framework for policy making and to design the incentives to motivate entrepreneurs. Incentivizing external growth instead of internal growth of business is required to achieve and breakeven point with the higher rates of quality of life and profits.

An Institutional Approach

One of the aspects that fit for this work was the subject where the importance of institutions is played and whether it can reach affect or influence strategies that take companies to conduct their operations. An aspect that Uber considered is the adaptation to the current legal framework, which call as the theory of institutions, and in this category, it is found in a definition of the Nobel laureate in economics, North (1990) defined an institution as humanly planned restrictions that structure the interaction of people, which is popularly known as rules of the game.

Likewise, the same author classifies 2 different types of institutions and classifies them as follows (North 2005) formal and informal institutions. In the former are the laws, regulations and standards, and on the side of informal talks about rules, culture and ethics, including different ideas, values and attitudes of people in their behavior in society. Moreover, it is possible to distinguish three aspects the authors belonging to the first generation of institutionalisms, neo institutionalisms and the new institutional economics (Urbado & Hernandez, 2007). Moreover, Veblen (1965) also talks about the institutions and gives us another definition that by the end of this work is also acceptable. It is defined as common and predictable patterns of behavior in society, including the habits of thought and action generally shared. One area where have failed Institutions are flaws in the regulations for these type of companies, i.e. not governments had considered the new e-business, category where Uber is characterized. Canals (1994)

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states that the objective of internationalizing a company are the opening of new markets, lower production costs, and a more efficient structure of production and distribution of the company.

The business model of this type of business is focused on a specific sector of the population and from this part gives a new way to operate, which is not available for all people who want to use the product or service this type of companies offer. The overall and global strategy adopted by these firms have advantages over competitors as it refers to how to compete and focuses on providing standardized products and services worldwide (Peng, 2000). Within the theory of institutions see different regulations that have occurred around the world to allow the application to offer their services. For example, in the United States in the city of Chicago a new category of transportation calls service transport networks, just as in Mexico City was created have made regulations for the operation of the service, in New Orleans you will have to pay the city by permits, something similar happened in New York where the council of citizenship and Uber reached an agreement to set the number of vehicles that can circulate in the city.

Just as there are cities where they operate without any regulation of institutions, there are cases like the above where they operate with certain regulations by the institutions and authorities of the city, but is also the case of Florida in the United States because it does not operate in this city for failing to meet the requirements of city tax. On the other hand, the phenomenon of globalization (Peng, 2012) refers to the close integration of people and countries around the world, and today this concept is applied in different sectors and industries.

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Collaborative Economies Business Model

Bostman and Rogers (2010) argue that firms like UBER are part of a classic model of collaborative economy, being a disruptive innovation (Christensen & Raynor, 2003) that occurs when individuals share common interests and a common philosophy of life. In this case, they aim to rent cars in shared taxis or whole taxis through a social search and management system (Bostman & Rogers, 2010). So, the emergence of this phenomenon is possible as the evolution of technology allows imitate the exchanges that usually or used to give face to face, on a larger scale thanks to the internet, together with the ability to create trust between strangers. Rifkin (2014) points out that the decline in marginal costs, which tends to be near zero, is resulting in a dichotomous economy, partly capitalist market and on the other hand, collaborative commons gradually drawn out a new economic paradigm. Interian, (2016) argues that the sharing economy is credited with reducing transaction costs, increase efficiency and promote accountability and competence. This model does not require a centralized entity that should have an inventory

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and therefore is free of logistics, costs associated with maintaining inventory, product and geographic expansion for these purposes.

This model by allowing individuals to take advantage of the ability to take advantage of an asset that already possess, collaborative business model eliminates in an efficient and convenient way transaction costs. The specific characteristics of collaborative consumer of passengers and commuters are little known, although generally, it may try to travelers connected and experts, likely to responsible consumption, characterized by a high level of trust in the other members of the community and familiarity with internet and online commerce, demanding about the quality of its transport and commuting experiences (Russo & Quaglieri, 2014).Despite its purported benefits, companies of collaborative economies have been strongly criticized for the way they operate, and in some cases have been forced to shut down operations. Critics argue that the laws are evading created precisely to regulate certain practices in which their companies are engaged; users sharing platforms become "prosumers" people who consume, like produce (Streitfeld, 2014).

Blurring the line between consumer and producer collaborative economy breaks with the traditional business model that companies own and people consume. On the other hand, the concept of sharing erodes the disinterested public regulation, substituting private regulation or leaving unattended regulated transactions. Because of this, business creation becomes more widespread and may even lead to displace their regulated and established counterparts some time ago. An example of this is Uber, which has become a ubiquitous service in major cities around the world (Interian, 2016). The most important cities in the United States and Europe have begun to implement regulations regarding share or rent cars and have initiated investigations with the goal of bringing the collaborative economy in accordance with existing laws (Chafkin, 2016).

On the other hand, information technologies have facilitated the exchange of user experiences, enabling the comments and product valuation objective and transparent manner. These valuations are perceived in the market as certain and are changing consumer behavior and redefining the role of influence during the buying process by providing more realistic expectations (Cañigueral, 2015). That is when the consumer can know the costs and perceived by others who have commented and valued their consumer experiences, which later will help to make a decision with some confidence, even if the consumer never had before contracted this service, reducing significantly benefits the perceived risk (Wen, 2009).

PROMUSAG PROGRAM: WOMEN ENTREPRENEURSHIP TO IMPROVE THE QUALITY OF LIFE

The Secretary of Agrarian Reform (Secretaría de la Reforma Agraria, SRA) is the institution of the Federal Government that serves women and men who live and work in the rural communities and ejidos or community´s owned land across the country. The SRA provides legal certainty for the owners of the land and promote comprehensive rural development social justice. One of the ways the SRA supports rural development is through the promotion of entrepreneurial and productive projects in ejidos and communities through its programs Support for Productive Projects in Agrarian Nucleolus Fund (Fondo de Apoyo para Proyectos Productivos en Núcleos Agrarios, FAPPA) Program for Women in the Agricultural Sector (Programa de la Mujer en el Sector Agrario, PROMUSAG) and Young Rural Entrepreneur and Land Fund (Joven Emprendedor Rural y Fondo de Tierras, JERFT). PROMUSAG is aimed at women

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who are organized to develop a productive project that allows them to earn an income and thus help fight poverty in rural areas (PROMUSAG 2012, SAGARPA, 2016).

Within PROMUSAG program, projects can be installed in various areas, such as ecotourism, cattle fattening, rural stores, food production or various services. Women living in the countryside can access the program PROMUSAG women's groups of 3-6 members, over 18 years old, who inhabit agrarian and rural areas owners of community land. The financial support is of $30,000.00 per member provided it does not exceed the amount of $ 180,000.00. Women may be benefiting from the support of PROMUSAG until they have been supported in the past five fiscal years by himself or by the FAPPA PROMUSAG (Fund for supporting productive projects in agrarian).

METHODOLOGY

The methods employed are the analytical and descriptive. The first aims to analyze the case and identify failures and successes which led the company for the ensuing year and the descriptive method to detail the situations experienced by the venture.

Case to Analyze

The history and details of the case were provided by one of the women who undertook this business which in turn is a daughter of the initial principal leader of the enterprise. To gather the information, a personal informal interview was conducted on May 2012. What more motivated the business venture was the fact that the main entrepreneur has a great taste an innate ability for this type of business, her personal qualities and characteristics mostly agree with those of a successful entrepreneur. The main obstacle for this business venture was the lack of funding, which it once existed, the project was launched.

In 2009 the entrepreneurial principal, was blessed with a support of $ 100,000.00 in cash, with the advantageous feature called "sunk" to the implementation of a rural business in the town of San Martin de Hidalgo, Jalisco, which consisted of raising and fattening cattle. Support was received from the government body called Agrarian Reform Secretariat by rural support program to women entrepreneurs "PROMUSAG". PROMUSAG central requirements requested to be eligible for funding to the various proposals were teams of nine members, all participants should be female, a project to undertake the business detailing emphasizing the distribution of grant money, it is sent to an agricultural engineer to develop the agricultural area and the last requirement was to have an area of land sufficient to carry out the purpose of the enterprise activity.

The selection criteria for the formation of the task force were: being female is the PROMUSAG prerequisite required and indispensable, belonging to the family, time available for the project and interest in it. The skills and / or abilities that have the formed team made are the leadership, expertise in law, some livestock knowledge and empirical knowledge of small business management. The way in which it was given the work distribution between women entrepreneurs was by making meeting arrangements, where they defined their roles. The "lady" was the project leader, his daughter is bachelor-in-law and has the role of administrator of financial resources, and the other members would act as support staff, i.e. performing operational tasks of supplies purchase, cleaning stalls, feeding cattle and attention to situations that may arise in the production area.

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The business plan prepared was paid before the monetary benefit was granted, it just detail issues relating to investment in equipment and production inputs such as instruments, equipment, food, young livestock, among others. Therefore, only was useful to structure the production plant and neither for business organization or healthy finance to sustain within inside. The way to get to the end customer and more convenient for the type of business, existing resources and the region where they conducted the enterprise, was to sell the product at a much larger broker to sell the product it the final consumer. The project lasted only six months from commissioning to decommissioning, which corresponds to a period of fattening cattle.

Application of the Theories to the Case

It is necessary to analyze the internal aspects of the company to find the main successes and failures committed in undertaking this business, as the main reasons for the success of a company are brewing inside of it. A business venture begins with the idea and the desire of an individual undertaking, which must have certain qualities and characteristics. In this case, for the entrepreneur's main business was a success in life, as she is a person who has the characteristics and qualities of a successful entrepreneur, which are constancy, sense or business opportunity, knowledge, personal responsibility and leadership skills.

The monetary resource was, together with the decision of entrepreneurship, the main trigger of the business. This financial resource was needed for the purchase of instruments and appliances for conditioning the production plant. These acquired assets would be tangible resources with which the company would have to begin to build a road and build competitive advantage. Unfortunately, these were not innovative or special characteristics that could lead the company to take advantage of some sort as cost leadership, differentiation or focus. It really was the most common for a company to take from this type of business. The fact that there was no proper business plan to guide this enterprise in the formation of a solid organizational structure led to the existence of a variety of situations, which the organization was not in a proper way as there is no basis for internal coordination. That is, the organization did not develop intangible resources, neither knowledge nor skills, and also did not took advantage of the existing resources in good way, and there was no strategic plan to guide the company towards a goal through proper orientation of each of the actions to be undertaken. This due to the existing empirical knowledge and not theoretical basis exists. When it happened the disease of the entrepreneurship leader in the early stages, when the project did not even started to run was one of the situations for which the organization had no way to handle properly.

The lack of evidence document-based to guide the integration of the existent resources and capabilities propelled an unsuitable an inadequate knowledge management tied to hand and feet to the organization in terms of the creation and development of competitive advantages. There were three reasons why the venture was short-lived for only six months:

1. Failures in the leadership capability, the main leader fell ill soon after received financing and abandoned the project, not permanently but did not have enough contact to conduct business to success, being at the head of the project the daughter of the main leader. Her daughter is Bachelor-in-Law as a profession, but without certainty in knowledge about business management and effective leadership skills. This created an atmosphere of des governance, which brought conflict among team members and discouragement to work and / or continue in the project.

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2. Lack of capacity in the area of procurement, equipment and supplies were bought at high prices, which were not covered by the investment project. This situation created a debt in addition to the already acquired through funding from PROMUSAG, turn in a few days unviable the business that was being undertaken, as the rate of return on investment would hardly be necessary for the project to survive in the short term.
3. Lack of marketing capacity to market the product, at the time it was possible to have a finished product, feedlot cattle in optimum conditions, the price at which it was sold was low. However, it was not possible to recover the investment in the production stage; the money raised was used to pay debts owed to suppliers and creditors, leaving the project without resources and women without encouragement to continue. This happens due to a lack of capacity in the area of negotiation and the lack of market intelligence to analyze the situation and to anticipate future price to implement the actions that were relevant.

UBER STRATEGIES FOR TRANSPORT INCORPORATED PRIVATE MARKET

Background of the Problem

Today globalization plays an important process, because by this concept can be eliminated some barriers between countries. Through technology has been a way these barriers have been eliminated, since technological innovations often come equally to different countries and at different times around the world, so it can be seen different products with similar characteristics, which is called as a standard product, regardless of whether they are produced in different cultures.

The story so before it started this century tells that the common way to establish a company along the story is that the company or the plant reached the place where he would have operations, had a physical place, and was established formally. Now it is seeing a new trend in strategies and ways of doing business in enterprises as a platform generated by its operations, profits, sales and everything related to business dedicated activity. Which have started with this simple idea is now changing the way people are transported in large cities, according to the Uber definition is the smartest way to move and luxury at low cost.

Technology and innovation play an important role in the process of globalization. Adopting a comprehensive strategy for technology companies is essential and addressing new ways of doing business. Nowadays have been emerging these new companies of successful technology-based, born in markets international companies like Netshoes, Netflix, Google, Amazon and many other technological changes that have been created and have managed to be successful in their business segment. The creation of these new companies has diversified options that consumers have to purchase the good or service that require, with new technology and not in the common traditional form.

One problem faced by companies that wanted to provide the services of private transport in the country, were the unions of taxi drivers that prevent or put barriers to companies that wanted to provide these services faced, and who would provide the service had to join the unions of transportation in addition to the permits they had to acquire by the authorities to provide the service. Thus, the institutions were an impediment to a company that wanted to be in this area. But also, an advantage of same weaknesses they could have the same institutions, they have created companies like Uber and reaching nations that did not consider these businesses in their regulations. Taking advantage of those holes is how they have

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succeeded in entering the global market.Within technology and new ways of doing business in the globalization process, it can be found different definitions and ways in which this process is changing. One of these definitions is that of Friedman (1970) and for example he says that globalization is a phenomenon characterized by technological innovation and its appearance in the world has been consolidated in stages. The initial stage of economic globalization, for some authors, is the industrial revolution the event that gave rise to this phenomenon. Most authors state that consolidation was given to a process of trade integration (Carbaugh, 2005).

In recent years this type of technology-based companies has increased their presence around the world and have led to the emergence of more of this type and have seen more and more not only born but become successful, not only in a nation but in the global market place. A technology-based company can differentiate itself from other companies with the main feature innovation processes, either in the product or service offered. They base their activity on technological research, having scientific and technological knowledge.

For purposes of this research, the case of Uber is studied from the side of the strategies used to enter the global market, and succeeding in many countries, taking into account that each country and culture is different, the use of concepts as work global, technology-based companies, global strategy was considered a factor for growth and establishment of industries or companies of this type. The technology-based companies like Uber have achieved their positioning in the limited control of institutions to such companies, in the absence of regulatory schemes both Uber and other companies have used this to establish their operations. Some features that make them different companies like Uber is that they have fewer staff operating or working for the company, since by creating the online platform and working and operating costs are lower than in a company established in a physical place also presented in the world with a standard or homogenized product. Companies like Uber generate an advantage for users or consumers and have achieved different countries or states to consider making changes to their laws to fit the modus operandi of these companies. States allow or block entry of Uber and other companies in their type, having a power in the region where they arrive with their operations, thus having influence on decisions or regulations made in the laws for operation.

The research of these report wants to answer is on How technology-based companies with a global strategy have succeeded in entering and being successful in the new way of doing business?

The importance comes to have this work of serious research to understand the impact of the strategies of technology-based companies taking specific case of Uber. This is done using the theory of institutions and by applying the concept of global strategy came to succeed. Overall, a case of Uber especially as famous as the raised here in this chapter case where the company has already been established in at least 20 countries, albeit with some adjustments as the nation where the product offering remains standard worldwide reaches, and despite having problems in some cities where he settled.

These problems especially with local competitors, called taxis are mainly due to fact they think it is unfair competition and with innovation that the company Uber made in the product achievement that many people with common form move from side to side in public or private transport, now do differently and have changed the way they use the shuttle. While we know that the group of people or consumers who can access this service is limited, because people who use it so far require at least two basic things to make use of the product. One of them is to have a cell phone where downloading the application, then also required to have a bank account as a credit card or debit card with which to pay the service they have. These basic elements are essential of this new business model and so far, it is fundamental to acquire a service like what Uber offers, because without them they cannot access the transfer from

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one place to another. Thus, this is being a limiting factor that not all people can consume this good or service, so the service is intended for a specific sector of the population which operates the platform.

In the case of Mexico, so far is not entirely clear the legal fulfillments that must have this company. Mexico is working on making changes to laws, regulations roads and adaptations of the legal framework of the relevant institutions to consider Uber and companies of its kind in formal enterprises. In this case, some state laws are working to make adaptations to their traffic laws, such as the state of Jalisco and Mexico City that having already advanced and concrete proposals as to how to resolve this issue. However, at the time of writing this report, some of the proposals were being approved or published to make them official.

Moreover, companies offering the same service as Uber, in this case the taxis see it as an illegal and unfair to the service competition that for years have been offering and operating in some form as a monopoly. They do not pay taxes and have adopted certain aggressive strategies to try to reach the market to Uber through intimidation or aggression towards users or drivers of the business. Taking advantage of technological changes and the weakness of the institutions not considered. Also, with the emergence years ago of other technology companies and carrying out a global strategy have been incorporated to market, different companies.

One of these technology-based companies with a comprehensive global strategy that has carried out these concepts in a successfully way is Uber because today it is seen with these strategies that has-been established in the market. After seeing this case have emerged more companies with the same features and offer the service of private transport, as are Cabify and City drive to name some of the same sector. Even its operations are similar to the case analyzed in this work. These firms are technology-based companies that offer a private shuttle service to their users through a platform. Although not all companies operate as such in the same cities, their strategies are like. On the other hand, if it is seen the part where it operates each company taking the case of Mexico. For example, in Guadalajara operates Uber and City drive but not Cabify, leading to the conclusion that even with global strategies are not present in the same cities or arrive at the same time. Uber is in Guadalajara and 379 cities worldwide and is aimed at a specific segment of the population that is people with bank account, credit card or debit card to pay for the service they purchase, as well as having the application installed on their cell phone.

Within its business model, Uber does not accept payment in cash so far, this being an important innovation in the model, and this aspect is also part of the diversification of the service. Another important issue is quality standards for these keep the user since the end of each trip it can rate the service and the driver, this being another innovation in the service provided how had offered traditional way. An important issue in such companies as already mentioned is the diversification of product or service offered, as it has been key to succeed and companies like Netshoes, Netflix, Amazon and the company analyzed in this case Uber. These technology-based companies have in common is that they are based on diversification and innovation in what they offer which is considered the most important to have successful operations in a globalized world. Another important segment is the population that has access to the good or service that is launched. when somebody wants to buy a product like shoes, food, books or any other product only they go to the market place where the product is sold and with money in hand it is acquired and anyone who can pay the price can buy it.

In the case of service Uber, this simply fact does not apply because it is a service that only is acquired it from a strict sense by people over 18, who are the people likely to have a bank account to pay for the service. Thus, the target population or that can be client f Uber, are people over 18 years with bank account. Uber on its website states that offers the service in five municipalities of the Metropolitan area

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of Guadalajara (ZMG), that is Guadalajara, Zapopan, Tlaquepaque, Tonala and Tlajomulco, taking a total of 2,745,260 potential customers broken down as follows the municipalities, and displaying data as much as by men and women.

Table 1. Total population of the metropolitan area of Guadalajara

Municipality	Population 18 and Over	Masculine Population 18 and More	Feminine Population 18 and More
Guadalajara	1,031,902	482,713	549,189
Tlaquepaque	376,022	182,406	193,616
Tlajomulco de Zúñiga	235,703	115,015	120,688
Tonalá	289,679	147,418	142,261
Zapopan	811,954	388,501	423,453

Source: Prepared with data from INEGI 2010 census

According to data from the Metropolitan Transportation Institute Jalisco, taxis continue to maintain market power and Uber is positioned in second place in service of private transport as it is concerned. An advantage of Uber, considered by users is mainly the price and greater security.

Analysis of Results

Today many companies seek more customer satisfaction or give greater importance to this issue. Therefore, they carry out different strategies to accomplish this and satisfy their customers. According to the sector where companies unfold will make the appropriate innovations to the product or service offered by adaptations according to geographical area, with strategic advertising, by price or by improving product quality. Sometimes what the customer is looking for comfort, closeness or facility to acquire the asset or service. This is what UBER has done to offer its service. Uber implements innovations in the business model.

In finding that customer satisfaction, Uber relies to implement its innovations both in service and customer experience that maximizes utility when using the service. One of those innovations was the automatic payment. Also requesting service by an application installed on the user's phone that easily and at the touch of a button is the means to obtain the service. So, consumers identify this innovation in service and thus the company could exercise monopoly power over its competitors once started. Uber to operate the platform seized market share by displacing the service that for years has been given in different parts of the world called taxis that were intended to transport people who had no car or prefer not to use it.

With all the technological changes that have occurred in recent years, it is common that most of the population have access to a cell where through download the application and use the platform can request their transportation service, regardless of whether they bring cash. Uber main advantages over its competitors and by its strategies just identified the customer, are:

1. Innovation in the way of providing the service.

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2. No need cash (automatic payment).
3. The customer requires a cell with the application and a bank account where he will be charged by the service.
4. Cheaper than a taxi fare.
5. Provide a standard or homogenized product.
6. They offer a bonus in addition to transportation, like listening to the music the customer wants during the trip, water, air conditioning in the car.

An important aspect to consider is that many innovations and changes that a company has made if the service or product offered does not meet the quality standards of its customers would not be accepted. Bringing the theoretical aspects to the practice when technological innovations, prices and product quality were bad, Uber would not have achieved success that has today. In this way, it can be seen how by implementing a comprehensive and global strategy, a standardized product and application of technology in its service, Uber achieved to implement a new business model in the field of private transport service, and how this has given rise to emerging technology-based companies in different industries or sectors.

These technology-based companies begin to take an important role by having greater technological resources in their operations, with so many changes that have occurred in the way business enterprises have had to adapt to these technological changes and because of this have emerged companies like Uber.

CONCLUSION AND RECOMMENDATIONS

Empirical knowledge of entrepreneurs, in this case, was not enough to route this business to success and the lack of structured knowledge and appropriate scientific support to this project strongly directed towards not stay in the market.

The recommendation for PROMUSAG is that it needs to call for a strategic plan as a requirement to be eligible for financial support. To start a business, the entrepreneurs should also count on empirical knowledge, a scientific basis, either by the project members, or by external consultants. One of the advantages of technology-based companies like Uber is to reduce costs and adapt to the new way they are giving businesses through different mechanisms and strategies that were studied for this case. It can be concluded that through a global strategy and technological adaptations companies like Uber have been successful and also taking advantage of the gaps that institutions not considering such firms have adapted to the country coming through a standard product offering in the world.

Companies of its kind have well defined characteristics as that base their operations through the use of technological resources, maintains a standard or homogenized product regardless of the region or geographical area and implements global strategies. However, a weakness that can have companies in their type and it is necessary to assess the institutional aspects, as in some countries are making changes to allow operation through restrictions or in some cases block and not allow its operation. It is important to consider carrying out a successful global strategy.

Another advantage that can have the technology-based companies over their competitors is that their operations are based on the use of technological resources, so it can be concluded that through technological innovations and through a global strategy, it is shown that there is an emerging new type of economic system or a new business model that emerged a few years ago and through successful cases like Uber. This new model begins to change the course of business. The elements that the company included and

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considered fundamental are the implementation of automatic payment, request the service by installed on a cell application because without it cannot access the transfer from one place to another, thus being a limiting so that not all people have free access to the service.

Finally, it should be mentioned that innovations do not reach at the same time to all places. Where the technology-based company starts operations, a company is critical to have a successful experience away from and continue to apply the strategies used to bequeath to success in its home and then expand their horizons.

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KEY TERMS AND DEFINITIONS

Business Model: It is a conceptual structure designed as a system to support the methods of business viability, the means to fulfill its purpose and goals, financing, resources, operations, customer base, generation of revenues and profits.

Collaborative Economy: It is a set of initiatives based on horizontal networks with the participation of a community and formed by individuals who have something to share and others who need them with the purpose of giving, swapping, borrowing, trading, renting, and sharing products and services based on distributed trust and decentralized power.

Private Market: The structure of transactions that are negotiated directly between two parties and can take any form the parties agreement.

Strategy: It is the orientation and delimitation given to resources and capabilities of a firm in relation to complex and uncertain competitive market environments in order to accomplish the vision and mission of the firm.

Technology-Based Company: Also known as tech company, it is a firm focusing on the development and manufacturing that uses leading edge scientific and technological knowledge systematically and continuously to produce new goods or services with high added value.

Transport Incorporated: The act or process of moving people or things through different means of transport from one place to another subject to a patronage or ridership refers to the number of people using a transit unit.

Uber: It is an acronym to mean ultimate, best for above in German. It also has the basic meaning of over, beyond, extremely good. As the trade mark and global brand of a private transportation incorporated company, Uber has been changing inner-city transport structure.

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Chapter 15
Lean Production and Its Impact on Worker Health:
Force and Fatigue-Based Evaluation Approaches

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ABSTRACT

Lean is currently applied successfully in many industrial sectors. However, its value and impact on human health is not fully understood. To gain a better understanding, this chapter explores how ergonomics force and fatigue evaluation methods can be applied in a manner to enhance lean initiatives. These methods incorporate ergonomic-related variables of force type, force duration, force frequency, and degree of awkward posture, and incorporate the recommended cumulative rest allowance (RCRA) model as a practical fatigue-based metric. These methods and their application are discussed.

INTRODUCTION

In today's global competition, successful companies focus on diversity and inclusion as a source of competitive advantage. The organizations use diverse methods and techniques to improve their productivity, quality, and profitability. In order to achieve this, the work organization system of lean production has been widely adopted throughout the industrial world. Lean originates from the Toyota Production System and has been recognized as doing more with less. Thus, it is oriented toward reduction of unnecessary variations and steps in the work process by the elimination of waste, which can be thought of as a non-value-added aspect of a product or service. Originally, the focus was paid to the elimination of wastes such as defects requiring rework, unnecessary processing steps, movement of materials or people,

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waiting time, excess inventory, and overproduction. But today Lean systems impact a wide-range of manufacturing related systems including the initial stages of product life cycle such as product development, procurement and manufacturing over to distribution (Womack & Jones, 1996). The most common practices associated with lean production are the following: bottleneck removal (production smoothing), cellular manufacturing, competitive benchmarking, continuous improvement programs, cross-functional work force, cycle time reductions, focused factory production, just-in-time/continuous flow production, lot size reductions, maintenance optimization, new process equipment/technologies, planning and scheduling strategies, preventive maintenance, process capability measurements, pull system/Kanban, quality management programs, quick changeover techniques, reengineered production process, safety improvement programs, self-directed work teams, and total quality management (Shah & Ward, 2003).

It should be clearly pointed out that the misusage of lean techniques can lead to overlooking issues that lead to health problems, injuries, or even accidents. All these consequences lead to the need to spend money on compensation claims, which may be the best example of waste (Pai et. 2009). The awareness of the relationship between worker health and lean among lean practitioners is not always visible. There are some studies which show such an impact in the areas of occupational injuries and illnesses, or job characteristics related to job strain and linked to hypertension and cardiovascular disease (Landsbergis et al., 1999). Furthermore, it has been investigated that lean production can empower workers (Shah & Ward, 2003; Taj & Morosan, 2011) as it requires intensified work pace and increased job demands. Decision authority and skill levels can increase modestly or temporarily, while decision latitude is kept at low level which can lead to job strain and finally, musculoskeletal disorders. In jobs with ergonomic stressors, intensification of labor appears to lead to increases in musculoskeletal disorders (Landsbergis et al., 1999). Lean may result in raised stress levels and therefore increase worker turnover and absenteeism with a negative impact on manufacturing performance (Gill, 2003). However, further studies revealed that this approach in fact increases the stress levels. But not on the shop floor as it was previously suggested, but rather on the managerial level (Sangwan, 2013). Furthermore, when lean was tested against such work organization models as: Taylorism model, human relations model and socio-technology models, on the two dimensions central or decentralized orientation and human factor orientation; it turned out that it outperforms both the Taylorism model and the human relations model (European Foundation Report, 2001).

Ergonomics is defined as the application of theory, principles, data and methods to design a system which accommodates both the human operator's capabilities and limitations in the work process (Wickens, 1992). Ergonomics enables us to better understand the interactions among humans and other elements of a system, allowing the optimization of overall system performance (Naranjo-Flores et. al, 2014). Ergonomics continues to become more and more important in industry due to the positive influence on productivity and efficiency as well as its modern-day focus to reduce or prevent work-related injuries. It should be appreciated that ergonomics and lean are highly inter-related. Ergonomic risks are strongly associated with lean-related wastes; and lean transformation should naturally lead to ergonomic risk reduction (Aqlan et. al, 2013). Despite these facts, many companies have implemented lean-related systems to control productivity and quality, without a clear understanding of the potential of ergonomics to contribute to the objectives of lean.

The purpose of this research is to better understand and communicate the application of modern ergonomics force and fatigue evaluation methods in lean initiatives. To achieve this objective, a systematic search of the literature was be carried out using the following electronic databases: MEDLINE, PubMed, Scopus, Clarivate Analytics (former Web of Science) and Science Direct. All databases were searched

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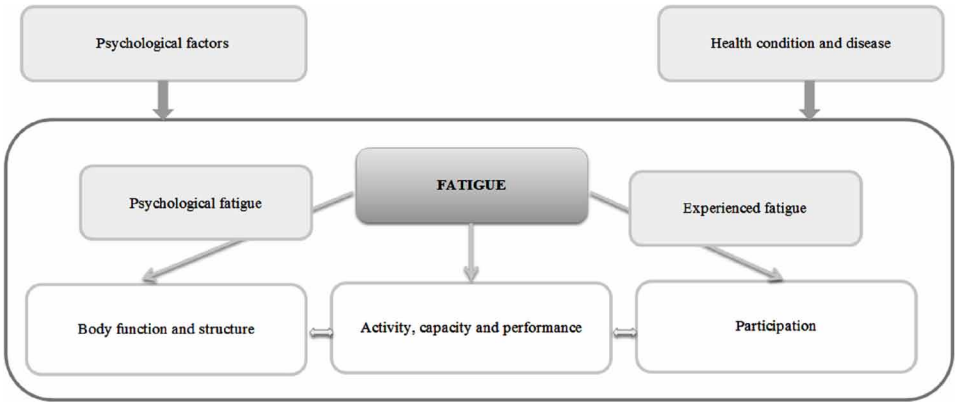
from their inception to April 2018. Keywords used in the search strategy were: "lean" AND "force" AND "fatigue" OR "fatigue" AND "calculator" OR "fatigue" AND "calculation" OR "muscle" AND "fatigue" OR "grip" AND "force" AND "fatigue" OR "pinch" AND "force" AND "fatigue" OR "press" AND "force" AND "fatigue". In order to find the supposed papers while reading the titles and abstracts the reference was made to human. This search was supposed to reveal better insight into approaches for the quantification of ergonomic related muscle fatigue, particularly those utilizing calculations-based models.

BACKGROUND

Fatigue is commonly perceived as a non-specific symptom that refers to health conditions of human beings. It is defined as an overwhelming sense of psychological and psychical tiredness, lack of energy and feeling of exhaustion which results in the perception of difficulty performing tasks (Gruet et al., 2013; Tran et al. 2010). If it is accumulated and not resolved, it can cause overwork, chronic fatigue syndrome, overtraining syndrome, and even endocrine disorders, immunity dysfunction, organic diseases and a threat to human health (Wan et al., 2017; Larun et al., 2017). It can be perceived as a multidimensional concept which can be integrated within the World Health Organization's Classification of Functioning, Disability, and Health (WHO-ICF). Following it, the effect of disease on body function and structure, activity and participation of the patient can be shown (Figure 1) (World Health Organization 2001, Vries et al. 2010).

Figure 1. Multidisciplinary concept of fatigue
Source: Adopted from (World Health Organization 2001, Vries et al. 2010)



Diverse fatigue classification can be found in the literature; however, the most general approach is to differentiate between objective and subjective fatigue. Objective fatigue is the observable and measurable loss in performance due to the repetition of a physical or mental task, while subjective fatigue is a feeling of early exhaustion, weariness and unwillingness to exert effort (Staub & Bogousslavsky, 2001). Moreover, when we refer to its duration, we can differentiate between acute fatigue and chronic fatigue. Acute fatigue can be quickly relieved by rest or life-style changes, whereas chronic fatigue is a persistent tiredness lasting months, and not ameliorated by rest (Norheim et al., 2011; Silverman et al.,

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2010; Kroenke et al., 1988). On the other hand, it can also be classified as mental fatigue, which refers to the cognitive or perceptual aspects of fatigue; and physical fatigue, which is related to the performance of the motor system. It is also possible to refer to different levels of the motor pathway and differentiate central and peripheral fatigue. Central fatigue originates at the central nervous system (CNS), which decreases the neural drive to the muscle. Peripheral fatigue is produced by changes at or distal to the neuromuscular junction (Gandevia, 2001; Bigland-Ritchie et al., 1978).

Two types of fatigue commonly associated with the application of industrial ergonomics are cognitive (mental) fatigue and whole-body fatigue. Methods of quantifying cognitive fatigue are not widely adopted by ergonomics practitioners in the field. Cognitive fatigue is often "measured" by administering subjective rating scales, resulting in metrics/outputs that are apt to be perceived as "highly subjective" by management. Due to cognitive fatigue being highly dependent upon individual perception, it is difficult to establish reliable (and credible) metrics for cognitive fatigue across jobs and tasks (Beurskens et al., 2016; Montalvo et al., 2016).

Whole body fatigue on the other hand is associated with energy consumed by the body during performance of a physical activity (i.e., materials handling, walking, running, etc.) (Kim et al., 2016). Whole body fatigue can be measured indirectly by measuring oxygen consumption by the body (i.e., ml O_2 per kg of bodyweight per min.). Then oxygen consumption is converted to energy consumption of the body (i.e., 1 liter of $O_2 = 5$ kcal). Direct measurement of oxygen consumption can be cumbersome, requiring workers to wear equipment that is somewhat invasive. This method is not commonly relied upon in the application of industrial ergonomics (Thomas et al. 2016).

Another method of quantifying energy consumption in the evaluation of whole body fatigue is by table lookup. Using this method, work is classified by distinct type/category of effort such as Light Work (consuming 1-2.5 kcal/min), Moderate Work (consuming 2.5-3.8 kcal/min), etc. Then by measuring or estimating the time spent performing each type/category of activity, a cumulative value of energy consumption is established.

Measuring whole body fatigue is not utilized to a significant extent in the mainstream application of industrial ergonomics. This may be due to most modern jobs not requiring high levels of whole body physical exertion. For example, strenuous materials handling tasks today are likely performed with the assistance of mechanized equipment rather than performed manually. For whatever reasons, reduction and prevention of musculoskeletal disorders are the primary focus of today's ergonomics initiatives rather than whole body fatigue.

A form of fatigue that lends itself to a higher specificity of measurement and practical application is localized muscle fatigue. Localized muscle fatigue concerns the fatiguing of active tissue associated with force applications by the worker. When muscles and other soft tissues become fatigued, this can be detrimental to the performance of physical work. This is depicted in Figure 2.

The authors prefer a practical definition of localized muscle fatigue:

A reduction in human current ability or capacity to apply force due to previous force exertions.

This reduction in ability or capacity to apply force can result in the worker using a higher percentage of his/her maximum strength toward the end of the shift (fatigued state) than was necessary at the beginning of the shift (non-fatigued state). This can also be a reduction in speed (velocity or time duration) at which a force is applied, or similarly a reduction in the speed of bodily movement (i.e., requiring more time to reach, bend, perform a movement sequence, etc.). This is particularly detrimental at a bottleneck station,

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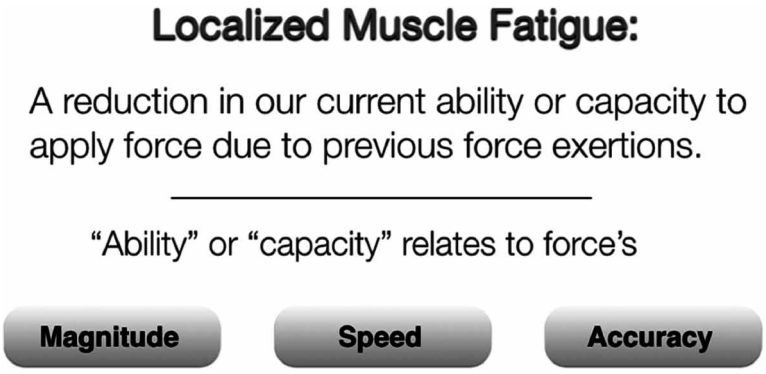
potentially negatively impacting the productivity rate of the entire line or process when the employee in a bottleneck station becomes fatigued. Or the reduction in ability or capacity to apply force could be a reduction in movement accuracy, resulting in increased quality defects for tasks requiring high levels of precision and accuracy. All these things can negatively impact work from a performance perspective.

Figure 2. Localized muscle fatigue's impact on human performance



FORCE AND FATIGUE EVALUATION IN LEAN APPLICATIONS: INDUSTRIAL INSIGHTS

Based on the authors' observations in industry, it is common for organizations to implement lean, yet experience considerable difficulty achieving the performance levels predicted by the lean tools of standard work, line balancing, etc. For work with a high manual work content component, it is a common occurrence for visual factory performance boards to display satisfactory productivity levels for the first 2-4 hours of the work shift, but then mysteriously record drops in productivity over the remainder of the work shift. In a similar fashion, it is common to observe satisfactory productivity levels during the first part of the work week, but then observe productivity decline (unexplainably!) toward the end of the work week. The authors believe this breakdown between "model productivity" and actual productivity may be due to lean approaches failing to adequately account for worker fatigue.

Worker fatigue can manifest itself in multiple forms. As previously outlined in this paper, commonly recognized categories of fatigue are cognitive fatigue, whole body fatigue, and localized muscle fatigue. Of these 3 categories of fatigue, the authors believe that the category most readily applied with significant benefits in a lean environment is localized muscle fatigue.

Localized muscle fatigue can be readily modeled within the lean initiative. Lean's standard work breaks jobs down into a sequence of defined tasks and subtasks. These task and subtask times are then used to calculate the cycle time of the job (projected time to complete one work cycle). Standard work can utilize predetermined time systems (such as MOST, MTM, etc.), but it is commonly accomplished through simple stopwatch time study. In the simple stopwatch method, a "representative worker" is selected for observation. Then a number of observations are recorded, and averaged to estimate the job cycle time. Most of these time study methods include fatigue allowances (allowances developed decades

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ago), but these standard work fatigue allowances do not incorporate modern methods involving the quantification of localized muscle fatigue.

After standard work's breakdown of jobs into tasks and subtasks, all that remains to quantify localized muscle fatigue is to identify a the additional ergonomic-related variables of

- **Force Type:** Pinch grip, hand grip, press with thumb, etc.
- **Force Duration:** How many seconds the force is applied – 1.2 s, 3.4 s, etc.
- **Force Frequency or Force "Count":** # times the force is applied per job cycle
- **Documentation of Degree of Awkward Posture:** Wrist flexion, ulnar deviation of wrist, etc.

This detailed ergonomic evaluation detail can be readily collected during the development of lean standard work. The next step is to process this data using an ergonomics evaluation model. An emerging model for evaluating localized muscle fatigue is the Recommended Cumulative Recovery Allowance, RCRA (Gibson & Potvin, 2016).

For a given segment of the worker population (often 25th percentile female strength), the RCRA can be used to calculate the recovery time necessary for muscle groups to recover from individual force exertions. For similar force types (hand grip, pinch, one-arm push, etc.), the recovery time for the task as a whole can be calculated by summing the individual task and subtask level recovery times. If the calculated total model recovery time is greater than the actual in-task recovery time, then in-task recovery is insufficient … and muscle fatigue should be anticipated. On the other hand, if the total model recovery time is less than the actual in-task recovery time, then the worker's muscles have (based on model calculations) sufficient recovery, and the worker should be able to perform the job without experiencing undue muscle fatigue over the course of the work shift.

SOLUTIONS AND RECOMMENDATIONS

RCRA based offshoot models and ensuing macro-ergonomics solutions have tremendous potential to benefit both lean and ergonomics. These lean-benefiting solutions include:

- **Line Balancing:** Utilizing RCRA calculations enable us to better assess localized muscle fatigue in traditional line balancing. Line balancing is a methodology for distributing tasks amongst stations to balance work content. Line balancing utilizes time-based metrics (values developed through standard work); but using the RCRA, it is possible to assign/distribute tasks among workstations in a manner to also prevent (or at least minimize) localized muscle fatigue. This approach can be thought of as "fatigue balancing", where tasks are assigned to stations in the optimal manner to prevent localized muscle fatigue.
- **Ergonomics Risk Assessment:** RCRA metrics complement traditional ergonomics risk assessment methods, helping identify jobs posing significant musculoskeletal injury risks. In additional to injury prevention, keeping job demands within RCRA-based limits also prevents localized muscle fatigue, positively impacting productivity and quality metrics.
- **Individualized Ergonomics Evaluation:** Incorporating individual strength levels (measured directly or estimated with predictive equations) into RCRA-based evaluation models enables ergonomics evaluation with respect to the individual. Instead of a one-size-fits-all approach to ergo-

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nomics evaluation, individualized evaluation offers greater "fidelity" in our efforts to identify jobs and job groups where physical job demands are misaligned with individual worker capabilities. These individualized evaluation approaches have the potential to promote increased diversity and inclusion through more effective work assignment, accommodation, and thoughtful job rotation considering persons with strength limitations (i.e., elderly employees, employees with strength reduction resulting from a prior injury, some female workers with limited upper body strength, etc.).

- **Job Rotation:** Aid in design of more effective job rotation plans, either designing for a specific strength percentile (i.e., 10^{th} percentile female strength, 25^{th} percentile female strength, etc.), or rotation plans utilizing individual strength inputs in the job rotation model logic.
- **Simulated Ergonomics Evaluation:** Once job demands are measured/documented, simulation approaches can be used to predict the impact to RCRA metrics of equipment or process changes (i.e., reducing cycle time, changing to a part design requiring higher assembly force, changing the mix of models run on an assembly line, etc.).

The above force and fatigue based macro-ergonomics solutions, incorporating RCRA-based fatigue evaluation models, have tremendous potential to enable lean practitioners to make better decisions with respect to design of physical work, employee work assignments, work scheduling, etc.; thus enabling lean practitioners to both optimize traditional lean objectives and positively impact ergonomics and the physical wellbeing of workers.

FUTURE RESEARCH DIRECTIONS

The authors believe that future research should explore the application of modern force and fatigue-based macro-ergonomics solutions for the purpose of positively impacting productivity and quality-related metrics, in addition to the long-standing role of ergonomics as a tool to prevent or reduce work-related injuries and associated costs. Macro-ergonomics solutions having such potential are line/"fatigue" balancing, individualized ergonomics evaluation, and simulated ergonomics evaluation. Advancements in this area require both empirical and theoretical research.

CONCLUSION

Lean and ergonomics go hand in hand. Successful integration of ergonomics into lean initiatives results in competitive advantages for companies … predictable productivity levels, prevention of workplace injuries, etc. Besides these obvious benefits, emerging force and fatigue evaluation approaches have tremendous potential to positively impact workforce diversity and inclusion, through better measurement and management of physical work requirements.

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KEY TERMS AND DEFINITIONS

Ergonomics: Process of adjusting surrounding to human.
Force: Strength generated by muscle.
Health: Condition of body, mind, and spirit to perform tasks effectively.
Lean: Create more with less.
Lean Thinking: Management approach how to deliver more while eliminating waste.
Muscle: Fibrous tissue which lets to contract, moves, or keeps the position of parts of the body.
Physical Fatigue: Temporary impossibility of muscle to perform tasks optimally.

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Chapter 16
How Does Schema Affect Stress and Productivity at the Workplace?
Quantitative Analysis of Schema in the Occupational Setting

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ABSTRACT

Maintaining mental health has become a great concern not only for one's well-being, but also for companies' management, while one's personality trait has gained its popularity as a cause. In this article, the authors then investigate how worksite productivity loss is accounted for by stress response accompanied with schema. To this end, the conventional stress model is extended so as to include schema. The pivotal idea of the extended model stands in that both stressor and strain are associated with schema. The result of multiple regression analysis showed that workplace productivity loss is most largely affected by irritability, fatigue, and depression. In addition, the result of hierarchical regression analysis revealed that schema affects stress reaction both directly and indirectly, and that there exists a so-called buffering effect between job control and coworkers' support. These findings suggest that work productivity may be improved by intervention regarding schema or by promoting the buffering effect.

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1. INTRODUCTION

Handling and tackling psychological stress are pivotal issues from both humanitarian and economic viewpoints (Lerner et al., 2001). The term stress is now associated with various academic fields, including psychology, psychiatry, and physiology (Bamber, 2006). Particularly in the vocational setting, it is mostly often linked to cognitive theory. This article also highlights the cognitive approach for workplace stress reaction; more precisely speaking, this plugs into the existing cognitive framework for occupational stress reaction another concept of cognitive theory, namely, schema. To this end, this article consists mainly of three concepts: occupational stress, worksite productivity loss, and schema. These are briefly reviewed respectively as follows.

1.1. Stress

An increasing amount of attention has been paid to mental stress at the workplace (Kivimäki, Vahtera, Pentti, & Ferrie, 2000; Theorell et al., 2003). Stress is now viewed in relation to physical, physiological, and psychological health, e.g., musculoskeletal symptoms (Boström, Dellve, Thomée, & Hagberg, 2008), sleep (Van Laethem, Beckers, Kompier, Dijksterhuis, & Geurts, 2013), depression (Mutkins, Brown, & Thorsteinsson, 2011), and so forth. Not until the adoption of cognitive theory was that promising pathways have been laid for occupational stress modeling (see (Staal, 2004), for review). One typical example of such models is the Job Demand-Control Support model (JDCS model), which delved into the causation of mental stress (Johnson & Hall, 1988; Johnson, Hall, & Theorell, 1989; Karasek, 1979). Karasek first presented this model, which characterizes psychological strain by the latitude of job demand and job control (Karasek, 1979). This model defines a stressful situation as the case where one has heavy job demand but has only a limited control over her/his task. Later, this idea was extended by adding a dimension of social support (Johnson & Hall, 1988; Johnson et al., 1989). This refined model postulates that one feels psychologically strained when s/he has greater job demand despite less latitude of control and support. This conceptualization is quite general and thus malleable enough to provide a basic framework for other later works (Häusser, Mojzisch, Niesel, & Schulz-Hardt, 2010).

One of the well-known stylized facts in the theory of stress reaction is the so-called *buffering effect* or *exacerbation effect*. These are generally the effects that the association of stressor with human relationships reduce or enrich with respect to their influence on stress outcomes (Cohen & Wills, 1985; Rook, 1984). In the context of the JDCS model, for example, the negative correlation of stressor and stress response is degraded by social support, which is the case where social support is buffering the stressor. The research on these phenomena has arguably been developed (Sapp, Kawachi, Sorensen, LaMontagne, & Subramanian, 2010), and the conclusions are often mixed (de Lange, Taris, Kompier, Houtman, & Bongers, 2003). Then, it is worthwhile investigating the existence of these effects and actually the present study shall contribute to this discussion to a certain extent.

1.2. Productivity

With a view to financial coping of companies, practical interest in stress assessment also entails its economic impact, or simply, productivity (Donald et al., 2005; Faragher, Cooper, & Cartwright, 2004). Although this term has various dimensions of definition (Cocker, Martin, Scott, Venn, & Sanderson, 2013), ranging from individual (Kessler, Greenberg, Mickelson. K. D, Meneades, & Wang, 2001), to

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business (Murphy & Cooper, 2000), to nation (Evans-Lacko & Knapp, 2016; Kessler et al., 2006), the research scope in the context of personal healthcare can plausibly be restricted to the workplace, which means we only need to consider the individual-level productivity and/or its loss (Chapman, 2005). The productivity loss at the worksite, by and large, consists of absenteeism and presenteeism (Chapman, 2005; Gosselin, Lemyre, & Corneil, 2013). Most commonly, the former is viewed as financial loss stemming from not being able to attend to work due to sickness or injury, and the latter is regarded as loss caused by an employee trying to work while s/he is unable to do so efficiently enough, due to her/his ill health (Aronsson, Gustafsson, & Dallner, 2000). Although absenteeism seems to be more costly to companies, a large body of existing studies has revealed that presenteeism is actually a heavier burden to companies in the long run (Chapman, 2005; Collins et al., 2005; Goetzel et al., 2004). Being consistent to this, some recent researches based on the individual level surveys also show the negative effect of depression on work productivity (McTernan, Dollard, & LaMontagne, 2013; Uribe, Pinto, Vecino-Ortiz, Gómez-Restrepo, & Rondón, 2017). To measure both or either of these workplace productivity losses, numerous questionnaires have been proposed (Mattke, Balakrishnan, Bergamo, & Newberry, 2007). In our study, we particularly focused on presenteeism.

1.3. Schema

When it comes to stressors, it is hypothesized that one's subjective evaluation of her/himself and others plays a remarkable role (Paterniti, Niedhammer, Lang, & Consoli, 2002; Stansfeld, 2002). The self-evaluation is, in most cases, characterized by the notion of *self-esteem*, which is explicitly considered in the Effort-Reward Imbalance model (ERI model) (Siegrist, 1996; Tsutsumi, Kayaba, Theorell, & Siegrist, 2001). This model identifies stressful conditions as imbalances between high effort exerted and low reward obtained. More specifically, reward is subdivided into three major aspects, namely, money, career opportunity, and self-esteem. Since this model can also treat explicitly the effect of the monetary aspects of occupations, it is particularly utilized for the study of job-related well-being (van Vegchel, de Jonge, Bosma, & Schaufeli, 2005). Regarding the evaluation of others, it may be useful to introduce the concept of *social capital*. This term can be traced back to several works (Aghion & Durlauf, 2005), and has been made use of in a multitude of research areas, such as crime rate and longevity (Putnam, 1995), education (Coleman, 1988), health and economy (Wilkinson, 1996), and so forth. In addition, the idea has certainly gained popularity in the field of psychological stress (Akram & Qayyum, 2014; Gächter, Savage, & Torgler, 2011; Sapp et al., 2010). Due to such a great availability, there has been no consensus reached on the definition of social capital. All literature, however, refers to something of *interpersonal relationship*, or *structure of community* (Aghion & Durlauf, 2005), which is indispensable to crystallize the notion of evaluation of others.

Meanwhile, some cognitive scientists ignited a discussion on *schema* in relation to mental disorders (Beck, 1979; Teasdale & Barnard, 1993). Schema is, in this context, defined as a relatively stable belief or attitude which is molded during childhood (Beck, 1979; Uchida et al., 2012) and which is, in turn, a deeper cognitive structure than automatic thoughts (Padesky, 1994). This was scrutinized and decomposed into four factors, namely, positive-self/others and negative-self/others (Fowler et al., 2006). The former two represent the positive belief towards oneself and others, respectively, and the latter two the negative ones for each (Fowler et al., 2006). When, for example, a person has greater negative schema, s/he, in general, tends to feel everything in an unfortunate way (Beck, 1979). In light of the above arguments, the positive and negative schemas on oneself can be viewed as an expansive definition of self-esteem,

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while the schemas on others are situated within the framework of social capital. Moreover, the notion of schema has quite recently been incorporated explicitly into the research about depressive symptoms (Friedmann, Lumley, & Lerman, 2016; Liu et al., 2014).

1.4. Motivation and Goal

As reviewed above, the concept of schema itself is not a recently developed concept. However, only a limited amount of literature has introduced this into the occupational context, and, if at all, they considered the conceptualization at best, lacking model-based quantitative examination (Bamber, 2006). In addition, despite the demand of measuring the worksite productivity, a paucity of literature has dealt with the productivity loss by means of model-based approach. Motivated by such circumstances, the present study constructs a model that includes both occupational stress and schema and emphasizes their quantitative analysis. Furthermore, in view of practical interest, this study assesses the extent of workplace productivity loss accompanied by psychological stress and schema. Moreover, the arguable existence of buffering/exacerbation effect is also tested.

Therefore, the objective of this study is to examine quantitatively the effect of schema on the worksite productivity. The quantitative analysis is composed of two parts: (1) to examine how worksite productivity loss is accounted for by stress response and (2) to extend the conventional stress model so as to include schema, and even elucidate its effectiveness on the model as a whole. In this process, we investigate specifically how schema affects stress responses, and whether there exists a buffering effect in the worksite stress model. The pivotal idea of our model stands in that both stressor and stress reaction are associated with schema.

2. METHOD

2.1. Study Population

In this study, we made use of data from a survey carried out at the site of "Dialogue in the Dark" in Japan. (The "Dialogue in the Dark" is a workshop starting from Hamburg in Germany and is now taking place in Japan, Singapore, Hong Kong, and other Asian countries as well as in many European countries. This workshop provides a training program for companies to foster good human relations among their employees. In particular, it is said that this program ferments one's positive feelings to both her/himself and others.) We adopted the data that was approved to use for academic purposes and eliminated the cases with missing values. The dates of the data ranged from 12 December 2016 to 25 April 2017, and the population size amounted to 198. The population mainly consisted of white-collar workers, those who work sitting in front of desks for a large portion of the daytime.

2.2. Instrument

Our model is largely composed of three factors, namely stress, productivity, and schema and we thus need to consider the operationalization of these. The most commonly used operationalization of the JDCS model is suggested as the Job Content Questionnaire (JCQ) (Karasek et al., 1998) and the questionnaire

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by the National Institute for Occupational Safety and Health (NIOSH) (47) (Hurrell & McLaney, 1988). These days, another measurement encompassing both of these was developed as the Brief Job Stress Questionnaire (BJSQ) (Inoue et al., 2014a; Inoue et al., 2014b). The BJSQ consists of three components, namely stressors, stress responses, and social supports, which are subdivided into 17 questions, 29 questions, and 11 questions, respectively. Each question was evaluated by a 4-stage rating. The stressors of this scale comprise 9 subscales (quantitative job overload, qualitative job overload, physical demands, job control, skill under-utilization, interpersonal conflict, poor physical environment, suitable jobs, and intrinsic rewards), while the stress responses consist of 6 subscales (lack of vigor, anger-irritability, fatigue, anxiety, depression, and physical complaint). The social supports are classified into three subscales according to the subjects who give support, which are supervisor support, coworker support, and support from family and friends. We draw upon this measurement in our study. As for worksite productivity loss, or simply presenteeism, this was assessed by the Work Limitation Questionnaire (WLQ), which had been developed by a research group from the Center for Health Solutions of the Institute for Clinical Research and Health Policy Studies at Tufts Medical Center (Amick, Lerner, Rogers, Rooney, & Katz, 2000; Lerner et al., 2003; Lerner, Reed, Massarotti, Wester, & Burke, 2002). The research group approved our use of the eight-item version of this questionnaire. This questionnaire is composed of four categories: time management, physical tasks, mental interpersonal tasks, and output tasks. For each category, respondents are asked two questions by a 6-stage rating, one meaning "does not apply to my job." Schema was calculated by the Brief Core Schema Scales (BCSS) (Fowler et al., 2006; Yamauchi, Sudo, & Tanno, 2009). This is available without any permission required and measures one's schema by four sections: Negative-Self (NO), Positive-Self (PS), Negative-Others (NO), and Positive-Others (PO). Each has six questions with a 5-stage rating.

2.3. Proposed Model

Our research interest lies, as mentioned before, in the association of mental stress, schema, and work productivity. Since our measurements were all self-administered questionnaires and since stress reactions are highly complicated psychological activities, one's feelings may well be influenced or even biased by their preconceived ideas about human relations. As a matter of fact, many cognitive factors, such as self-criticism, and self-assurance, are known to be predictors of stress reactions; see (Bamber, 2006) for a review of recent developments on this topic. We first hypothesized that one's self-assessment of mental stresses may vary depending on the degree of schema, which is characterized by one-way arrows from schema to stressors, stress responses, and social supports. As for worksite productivity, despite some other research hypothesizing that work productivity is related to stressors and/or stress responses (see (Yang et al., 2015), for instance), we postulated that it is determined solely by stress responses, which is represented as a one-way arrow from stress responses to worksite productivity. We believe it is not an unreasonable assumption because the stressors and worksite performance in our scope seem to be unrelated to each other. This proposed model is encapsulated in Figure 1. From a practical viewpoint, of greatest interest is to measure how much the schema affects productivity directly and indirectly through the stress model. To this end, it is pivotal to distinguish the existence of the buffering effect or exacerbation effect. (In our model, we only cared about the buffering effect. The examination of the other was left to future work.) Thus, we also considered these effects by means of interaction terms of stressors and social supports.

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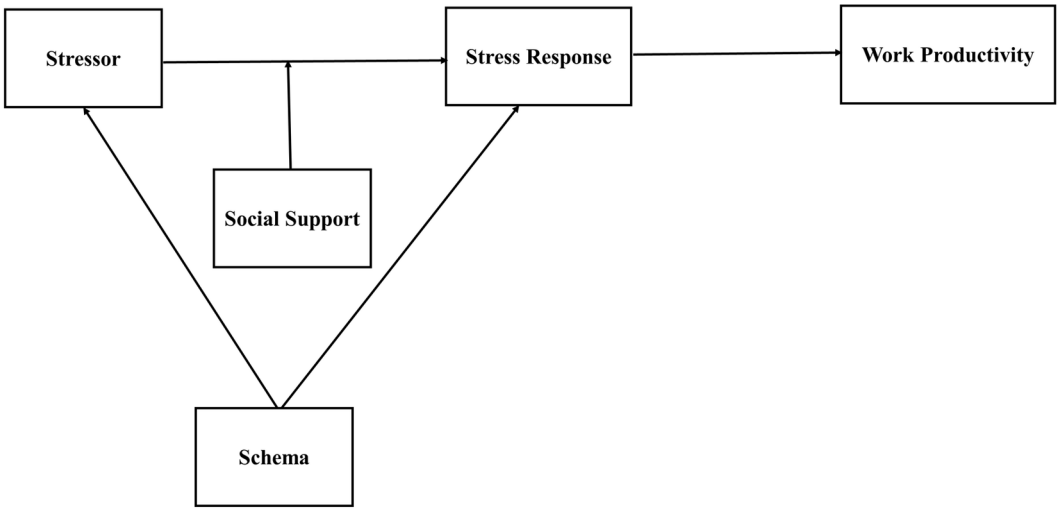
In the present study, we selectively employed the following subscales from each instrument; (1) two stressors (psychological workload and job control), six stress responses (lack of vigor, irritability, fatigue, anxiety, depression, and physical stress reaction), and three social supports (supervisor support, coworker support, and support from family and friends) from the BJSQ, and (2) the overall WLQ index from the WLQ, and (3) all the four subscales (NS, PS, NO, and PO) from the BCSS. To sum up, our hypothesis on stress responses can be operationalized as follow: six stress responses (lack of vigor, irritability, fatigue, anxiety, depression, and physical stress reaction) may respectively be determined by two stressors (psychological workload and job control) and three social supports (supervisor support, coworker support, and support from family and friends) with four subscales (NS, PS, NO, and PO) being covariates. Similarly, our hypothesis on the worksite productivity can be operationalized as follow: the overall WLQ index may be determined by six stress responses (lack of vigor, irritability, fatigue, anxiety, depression, and physical stress reaction).

Figure 1. Conceptual Framework of the Proposed Model



2.4. Statistical Analysis

Our analysis comprised mainly two steps. In the first step, to explore the relation between worksite productivity and stress reactions, we regressed the productivity scores (WLQ) on various stress responses (BJSQ). More precisely, we carried out a multiple regression analysis of the WLQ with the six stress responses (lack of vigor, irritability, fatigue, anxiety, depression, and physical stress reaction) being simultaneously independent variables. The purpose of this step is to drop ineffective variables from our model, and thus to reduce the number of the variables to be further investigated. The variable selection was waged based on (adjusted) coefficient of determination.

In the next step, we studied the causation mechanisms of the stress responses that were proved, in the previous step, to be significant to work productivity. To this end, for each significant stress response, we conducted a hierarchical regression analysis, using the BJSQ and BCSS. Thus, we conducted a multiple regression analysis of each of the significant stress responses with the two stressors (psychological work-

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load and job control), the three social supports (supervisor support, coworker support, and support from family and friends), the four schemas (NO, PO, NS, and PS), and the interaction terms of them being simultaneously independent variables. This analysis is composed of eight models as described below. We first examined the influence of schemas on stress response by regressing stress responses on schemas (Model 1). Letting these schemas be covariates, we added job demand and job control into independent variables (Model 2). Into the regressors of Model 2, we assimilated supervisor support (Model 3) and coworker support (Model 4). Moreover, for the sake of investigating the interaction effects of stressors and social supports, we explored four other models. Model 3 was extended by being integrated with the interaction effects of job demand and supervisor support (Model 5) and with the interaction of job control and supervisor support (Model 6). Similarly, Model 4 was broadened to encapsulate the interaction terms of job demand and coworker support (Model 7) and to include the terms of job control and coworker support (Model 8).

In addition, when the analysis above unveiled the existence of interaction terms, we furthered this by mean of analysis of covariance (ANCOVA) letting schemas be covariates. In this analysis, we compared the scores of stress response of higher social support with the one of lower social support with respect to high and low values of stressors. Here, the data were grouped according to their values; the data higher than median value are labeled as "higher" and the ones lower than the median as "lower."

Throughout our analysis, we regarded each score as a continuous variable, and adopted a reverse scoring so that every variable means "the higher it is, the worse the situation is." Moreover, these variables were all centered to deal with multicollinearity. Calculation of each score and relating data screening was carried out by the statistical computing software R, and all the other computation in our analysis was conducted by the statistical tool SPSS version 24 for Windows. We set the level of significance basically at $p<0.05$ but in view of the smaller size of our data, we occasionally admitted the level at $p<0.10$.

3. RESULTS

To begin with, we regressed the score of WLQ on six stress responses, i.e., lack of vigor, irritability, fatigue, anxiety, depression, and physical stress reaction. We also selected variables so as to maximize the (adjusted) coefficient of determination of the models. As a result, we found valid, with $R^2=0.258$, $\Delta R^2=0.247$ the three variables irritability, fatigue, and depression.

Before moving on to the main analysis, let us review briefly the summary descriptive statistics of the data exploited. Table 1 compares the levels of each stress response between the high score group and the low score one in terms of schema and other stressors. The table illustrates a consistent trend that the groups with higher score of schema and stressor tend to experience significantly higher stress. The observations on correlation coefficients are presented in Table 2. The table reveals that the positive schema for oneself is positively and relatively highly correlated to that for others (r=0.478). The same feature holds true for the negative schemas (r=0.411). In addition, both negative schemas witnessed relatively stronger positive correlation with the other variables. Without any surprise, stress responses had high correlations among them.

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Table 1. Descriptive Statistics of the Data

		Lack of Vigor (min: 3, max: 12)			Irritability (min: 3, max: 12)			Fatigue (min: 3, max: 12)		
	N	**mean**	**SD**	**P value**	**mean**	**SD**	**P value**	**mean**	**SD**	**P value**
Negative-Self										
High	108	7.91	2.41	< 0.01	6.65	2.53	< 0.007	6.76	2.48	0.001
Low	90	6.95	2.57		5.42	2.01		5.61	2.07	
Positive-Self										
High	116	7.96	2.52	0.01	6.47	2.48	< 0.01	6.52	2.50	< 0.05
Low	82	6.79	2.38		5.56	2.14		5.84	2.12	
Negative-Others										
High	102	7.69	2.32		6.63	2.44	0.01	6.63	2.45	< 0.05
Low	96	7.25	2.71		5.52	2.20		5.82	2.21	
Positive-Others										
High	109	8.27	2.08	< 0.001	6.77	2.54	< 0.001	6.78	2.56	< 0.001
Low	89	6.50	2.68		5.26	1.89		5.57	1.92	
Job Demand										
High	107	7.46	2.42		6.42	2.55	< 0.05	6.93	2.46	< 0.001
Low	91	7.49	2.65		5.71	2.12		5.42	1.97	
Job Control										
High	121	7.77	2.38	< 0.05	6.50	2.35	< 0.05	6.61	2.36	< 0.01
Low	77	7.01	2.69		5.45	2.31		5.64	2.28	
Supervisor Support										
High	120	8.08	2.28	< 0.001	6.33	2.34	< 0.10	6.53	2.39	< 0.05
Low	78	6.55	2.62		5.73	2.42		5.79	2.28	
Coworker Support										
High	139	8.07	2.20	< 0.001	6.21	2.38		6.51	2.37	< 0.05
Low	59	6.08	2.71		5.81	2.39		5.59	2.25	
		Anxiety (min: 3, max: 12)			**Depression (min: 6, max: 24)**			**Physical Stress Reaction (min: 6, max: 24)**		
	N	**mean**	**SD**	**P value**	**mean**	**SD**	**P value**	**mean**	**SD**	**P value**
Negative-Self										
High	108	6.57	2.28	< 0.001	11.03	3.82	< 0.001	19.75	6.30	< 0.05
Low	90	5.20	1.71		8.54	2.76		17.33	5.16	
Positive-Self										
High	116	6.11	2.13		10.35	3.74	< 0.05	19.60	6.66	< 0.05
Low	82	5.71	2.16		9.26	3.29		17.30	4.36	
Negative-Others										
High	102	6.58	2.36	< 0.001	10.95	3.88	< 0.001	18.85	6.14	
Low	96	5.27	1.66		8.79	2.89		18.43	5.70	
Positive-Others										

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Table 1. Continued

High	109	6.37	2.31	< 0.05	10.94	3.87	< 0.001	19.59	6.63	< 0.05
Low	89	5.42	1.81		8.62	2.75		17.49	4.70	
Job Demand										
High	107	6.44	2.24	< 0.001	10.60	3.89	< 0.01	19.72	6.61	< 0.01
Low	91	5.36	1.87		9.07	3.03		17.38	4.71	
Job Control										
High	121	6.33	1.92	< 0.01	10.38	3.54	< 0.05	18.96	5.97	
Low	77	5.35	2.34		9.15	3.57		18.15	5.84	
Supervisor Support										
High	120	6.34	2.14	0.001	10.50	3.54	< 0.01	18.74	6.02	
Low	78	5.34	2.03		8.97	3.50		18.51	5.79	
Coworker Support										
High	139	6.18	2.14	< 0.05	10.42	3.44	< 0.01	18.94	5.99	
Low	59	5.38	2.07		8.67	3.67		17.94	5.74	

Afterwards, for each of these three stress outcomes, we conducted a hierarchical regression analysis with independent variables being schemas, stressors, and social supports. As a result, for all three responses, the BCSS terms have, more or less, the positive coefficients being significant. Only irritability, however, showed a remarkable result in terms of the existence of interaction effects (Table 3-5). Here, we illustrate the details of our analysis taking irritability as an example. In our analysis, model 1 revealed that the main effects of negative-self schema and negative-others schema were significant and their standard partial regression coefficients were both positive, which means the more negative belief on oneself and/or others is, the more one may feel irritated. In model 2, job demand and job control were shown to be significant at the significance levels of 5% and 10%, respectively. Since the standard partial regression coefficients for them were both positive, it can then be said that the higher the job demand is and/or the less the job control is, the more one may feel irritated, which is consistent with the conceptual definition of the JDCS model. The coefficient of determination actually improved (ΔR^2=0.033, F(2,191)=4.247, p<0.05). Model 3 and model 4 were used to examine the effectiveness of supervisor support and coworker support, but neither of them turned out to be valid. The buffering effect was investigated in the other models as interaction effects. Only model 8, which included the interaction term of job control and coworkers support, was significantly improved. As a matter of fact, the degree of model fit improved (ΔR^2=0.023, F(1,189)=5.931, p<0.05).

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Table 2. Correlation Coefficients

		Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
1	Negative-Self	4.72	4.04													
2	Positive-Self	22.31	4.45	0.264**												
3	Negative-Others	3.42	3.40	0.411**	-0.013											
4	Positive-Others	20.79	4.50	0.210**	0.478**	0.321**										
5	Job Demand	8.63	2.00	0.176*	0.109	0.106	0.115									
6	Job Control	5.91	1.98	0.156*	0.242**	0.051	0.082	0.061								
7	Supervisor Support	7.19	2.34	0.187**	0.087	0.170*	0.277**	-0.063	0.247**							
8	Coworker Support	6.60	2.07	0.190**	0.103	0.168*	0.386**	-0.006	0.146*	0.684**						
9	Lack of Vigor	7.47	2.52	0.279**	0.321**	0.182*	0.377**	-0.008	0.181*	0.342**	0.343**					
10	Irritability	6.09	2.38	0.380**	0.179*	0.365**	0.265**	0.190**	0.108	0.141*	0.269**					
11	Fatigue	6.24	2.37	0.402**	0.229**	0.385**	0.262**	0.328**	0.243**	0.157*	0.165*	0.380**	0.506**			
12	Anxiety	5.94	2.15	0.433**	0.196**	0.444**	0.246**	0.282**	0.221**	0.223**	0.168*	0.239**	0.464**	0.497**		
13	Depression	9.90	3.59	0.470**	0.194**	0.472**	0.292**	0.181*	0.162*	0.22**	0.219**	0.467**	0.482**	0.606**	0.654**	
14	Physical Stress Reaction	18.65	5.92	0..9**	0.198**	0.207**	0.207**	0.211**	0.079	0.030	0.058	0.265**	0.316**	0.514**	0.340**	0.449**

*: $p<0.05$; **: $p<0.01$

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Table 3. The Result of Hierarchical Regression Analysis (Irritability)

Irritability	Model 1		Model 2		Model 3		Model 4	
	B	***β***	**B**	***β***	**B**	***β***	**B**	***β***
Negative-Self	0.145	0.245***	0.127	0.215**	0.129	0.219**	0.127	0.215**
Positive-Self	0.035	0.065	0.015	0.028	0.013	0.024	0.015	0.028
Negative-Others	0.162	0.230**	0.155	0.221**	0.155	0.221**	0.155	0.221**
Positive-Others	0.058	0.109	0.058	0.110	0.063	0.118	0.058	0.109
Job Demand			0.168	0.141*	0.164	0.137*	0.168	0.141*
Job Control			0.146	0.121†	0.154	0.128†	0.145	0.121†
Supervisor Support					-0.029	-0.028		
Coworker Support							0.001	0.001
Job Demand × Supervisor Support								
Job Control × Supervisor Support								
Job Demand × Coworker Support								
Job Control× Coworker Support								
R^2		0.218***	0.251**			0.252***		0.251***
ΔR^2		0.218	0.033*			0.001		0.000
Irritability	**Model 5**		**Model 6**		**Model 7**		**Model 8**	
	B	***β***	**B**	***β***	**B**	***β***	**B**	***β***
Negative-Self	0.129	0.219**	0.129	0.219**	0.127	0.215**	0.130	0.221**
Positive-Self	0.013	0.025	0.012	0.022	0.010	0.019	0.012	0.022
Negative-Others	0.155	0.221**	0.163	0.232**	0.148	0.211**	0.167	0.239**
Positive-Others	0.063	0.118	0.057	0.107	0.061	0.115	0.050	0.095
Job Demand	0.164	0.137*	0.165	0.139*	0.170	0.142*	0.160	0.134*
Job Control	0.153	0.127†	0.148	0.123†	0.147	0.122†	0.152	0.126†
Supervisor Support	-0.028	-0.028	-0.024	-0.023				
Coworker Support					-0.002	-0.002	0.006	0.006
Job Demand × Supervisor Support	-0.002	-0.004						
Job Control × Supervisor Support			0.032	0.062				
Job Demand × Coworker Support					0.027	0.052		
Job Control × Coworker Support							0.091	0.153*
R^2		0.252***		0.255***		0.254***		0.274***
ΔR^2.		0.000		0.004		0.003		0.023*

Note. †: p < 0.10, *: p < 0.05, **: p < 0.01, ***: p < 0.001.

B: partial regression coefficient; ***β***: standard partial regression coefficient; R2: coefficient of determination; ΔR2: R2 increment

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Table 4. The Result of Hierarchical Regression Analysis (Fatigue)

Fatigue	Model 1		Model 2		Model 3		Model 4	
	B	***β***	**B**	***β***	**B**	***β***	**B**	***β***
Negative-Self	0.142	0.242***	0.114	0.194**	0.111	0.189*	0.110	0.188*
Positive-Self	0.076	0.142†	0.048	0.091	0.051	0.096	0.052	0.098
Negative-Others	0.188	0.270***	0.178	0.255***	0.177	0.255***	0.179	0.257***
Positive-Others	0.030	0.057	0.029	0.055	0.023	0.044	0.019	0.037
Job Demand			0.285	0.241***	0.290	0.245***	0.288	0.244***
Job Control			0.189	0.158*	0.179	0.150*	0.182	0.153*
Supervisor Support					0.036	0.036		
Coworker Support							0.047	0.041
Job Demand × Supervisor Support								
Job Control × Supervisor Support								
Job Demand × Coworker Support								
Job Control × Coworker Support								
*R*2		0.249***		0.329***		0.330***		0.331***
ΔR^2		0.249***		0.081***		0.001		0.001
Fatigue	**Model 5**		**Model 6**		**Model 7**		**Model 8**	
	B	***β***	**B**	***β***	**B**	***β***	**B**	***β***
Negative-Self	0.111	0.190*	0.111	0.189**	0.110	0.188**	0.111	0.189**
Positive-Self	0.052	0.098	0.050	0.094	0.052	0.098	0.052	0.097
Negative-Others	0.178	0.256***	0.183	0.263***	0.179	0.257***	0.180	0.259***
Positive-Others	0.023	0.044	0.019	0.036	0.019	0.037	0.019	0.036
Job Demand	0.291	0.246***	0.292	0.246***	0.289	0.244***	0.288	0.243***
Job Control	0.178	0.149**	0.175	0.146*	0.183	0.153*	0.183	0.153*
Supervisor Support	0.037	0.037	0.040	0.040				
Coworker Support					0.047	0.041	0.048	0.042
Job Demand×Supervisor Support	-0.008	-0.016						
Job Control×Supervisor Support			0.024	0.046				
Job Demand×Coworker Support					0.001	0.001		
Job Control× Coworker Support							0.008	0.013
R^2		0.330***		0.332***		0.331***		0.331***
ΔR^2		0.000		0.002		0.000		0.000

Note. †: $p < 0.10$; *: $p < 0.05$; **: $p < 0.01$, ***: $p < 0.001$; B: partial regression coefficient; ***β***: standard partial regression coefficient; R2: coefficient of determination; ΔR2: *R2* increment

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Table 5. The Result of Hierarchical Regression Analysis (Depression)

Depression	Model 1		Model 2		Model 3		Model 4	
	B	***β***	**B**	***β***	**B**	***β***	**B**	***β***
Negative-Self	0.266	0.299***	0.250	0.282***	0.240	0.270***	0.241	0.271***
Positive-Self	0.058	0.071	0.039	0.048	0.048	0.060	049	0.061
Negative-Others	0.336	0.319***	0.330	0.313***	0.329	0.312***	0.334	0.316***
Positive-Others	0.079	0.099	0.080	0.101	0.060	0.075	0.054	0.068
Job Demand			0.138	0.077	0.157	0.087	0.147	0.082
Job Control			0.140	0.077	0.103	0.057	0.122	0.067
Supervisor Support					0.128	0.084		
Coworker Support							0.125	0.072
Job Demand × Supervisor Support								
Job Control × Supervisor Support								
Job Demand × Coworker Support								
Job Control × Coworker Support								
R^2		0.334***		0.346***		0.352***		0.350***
ΔR^2		0.334***		0.011		0.006		0.004
Depression	**Model 5**		**Model 6**		**Model 7**		**Model 8**	
	B	***β***	**B**	***β***	**B**	***β***	**B**	***β***
Negative-Self	0.240	0.270***	0.240	0.270***	0.241	0.271***	0.241	0.271***
Positive-Self	0.048	0.060	0.048	0.060	0.050	0.062	0.049	0.061
Negative-Others	0.329	0.312***	0.331	0.313***	0.334	0.317***	0.334	0.317***
Positive-Others	0.060	0.075	0.059	0.074	0.054	0.068	0.054	0.068
Job Demand	0.157	0.087	0.157	0.088	0.147	0.082	0.147	0.082
Job Control	0.103	0.057	0.102	0.056	0.122	0.067	0.122	0.067
Supervisor Support	0.128	0.083	0.130	0.084				
Coworker Support					0.126	0.073	0.126	0.072
Job Demand × Supervisor Support	0.001	0.002						
Job Control × Supervisor Support			0.007	0.010				
Job Demand × Coworker Support					-0.004	-0.005		
Job Control× Coworker Support							0.004	0.005
R^2		0.352***		0.352***		0.350***		0.350***
ΔR^2		0.000		0.000		0.000		0.000

Note. †: $p < 0.10$; *: $p < 0.05$; **: $p < 0.01$; ***: $p < 0.001$; B: partial regression coefficient; *β*: standard partial regression coefficient; $R2$: coefficient of determination; $\Delta R2$: $R2$ increment

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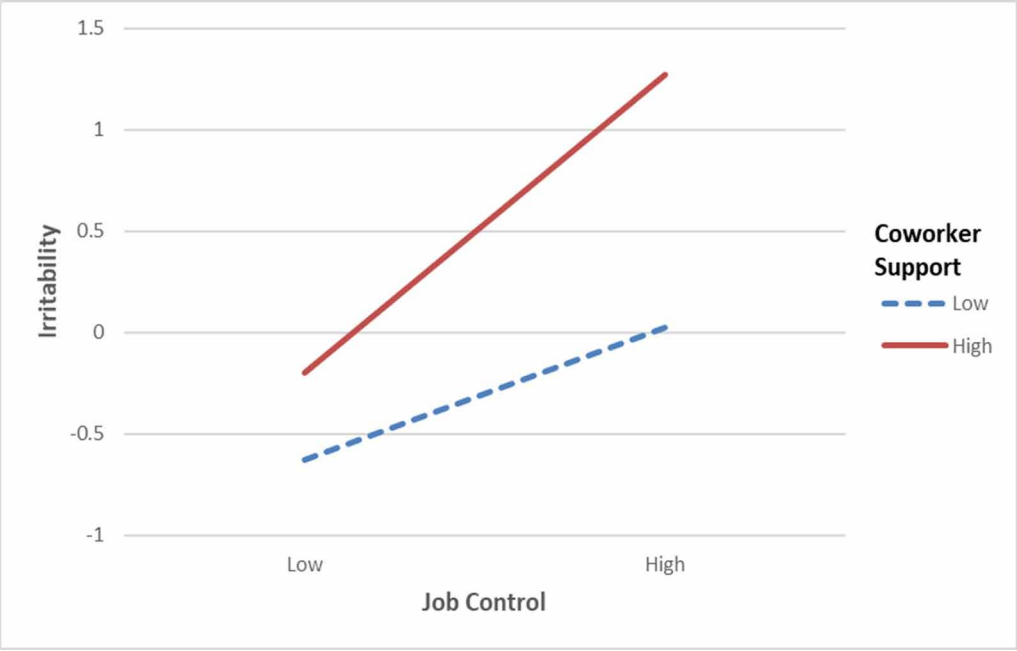
To see the effects of the interaction terms in detail, we used analysis of covariance (ANCOVA), letting schema be covariates. In this analysis, we compared the scores of irritability with higher social support to the ones with lower social support with respect to the level (high or low) of stressors (see Figure 2). As a result, regardless of the degree of job control, those with high score of coworker support tend to have significantly higher scores of irritability comparing to those with lower score of coworker support ($p<0.05$). This suggests that the people with insufficient assistance from their colleagues feel mental stress, that is to say, feel irritated, more seriously than those with sufficient coworker support. (Note that we applied reverse scoring to our data, and thus our data need to be understood as "the higher the score is, the worse the situation is." For instance, the higher value of stress score means that one is feeling more stress, and vice versa). Moreover, within the same group with the high score of coworker support, the score of irritability for the participants with the higher value of coworker support was significantly greater than that for those with the lower value of coworker support ($p<0.05$). This means that among the people receiving less support from their colleagues, the ones who do not have enough control over their jobs are likely to feel much more mental stress than those who have plentiful resources on their job. These findings considered altogether, it might safely be concluded that there is a buffering effect as far as our analysis is concerned.

Figure 2. Interaction Effect of Co-workers Support



4. CONCLUSION

This study presents an in-depth investigation of the JDCS model in relation to worksite productivity and personality trait. Integrating our findings, the conclusions made in this research add some insightful implications to the existing knowledge on stressors and their responses. One thing is that worksite pro-

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ductivity loss is most largely affected by irritability, fatigue, and depression. Another is that the schema affects stress reaction not only directly, but also indirectly, i.e., through a buffering effect. Combining these findings, one can possibly improve work productivity by intervention regarding schema. To the best of our knowledge, this is the first study to not only discuss simultaneously occupational stress, schema, and worksite productivity loss, but also to carry out their qualitative analysis.

First of all, our results of the multiple regression analysis highlight that the loss of worksite performance is mostly explained by the three stress responses irritability, fatigue, and depression. It is true that the association between mental stress and work productivity loss is not a new topic for the study of occupational health. As a matter of fact, our result matches the previously reported ones, which state that depression, or simply mental stress, is the major driver of worksite productivity loss (Rost, Meng, & Xu, 2014; Simon et al., 2001; VanWormer et al., 2011). Yet the strength of our study is that we considered various types of stress responses as well as depression. Moreover, this specification may be beneficial especially when we assume the variables or covariates behind the stressors and stress responses do not directly affect workplace productivity loss, since in this case we wish to distinguish each association between stress-related variables and covariates. Otherwise, we would not be able to tell whether the loss is driven mainly by stress-related variables or by covariates.

Second, the hierarchical regression analysis revealed that the schema (Negative-Self and Negative-Others in particular) affects the stress responses (irritability, fatigue and depression) in direct or indirect way. Remarkably, the coefficients for these schema variables are all positive, which means that the more one holds the negative belief on oneself and others, the more s/he feels irritated, fatigued and depressed. Moreover, our results found the buffering effect of job control and coworker, although there is much literature contradicting our results. For example, completely opposite results to ours were reported by stating the significance of the buffering effect of job demands and supervisor support (Vanroelen, Levecque, & Louckx, 2009). This difference is possibly accounted for by the type of population, i.e., the population of their research was blue collar workers, while ours was white collar workers. This sort of inconsistency, in general, has various possible reasons. One candidate is that since the data are usually obtained from multiple providers, the results of analysis may fluctuate (Cranford, 2004). Another explanation is attributed to the poor reliability of measurement and the deficiency of statistical analysis (Cohen & Wills, 1985).

Besides, from a theoretical point of view, this is partly because the notion of social support itself is vaguely defined. Social support can typically be viewed from two different standpoints; one view regards it as structural and the other functional (Beehr, Jex, Stacy, & Murray, 2000). Regarding the former, social support may be situated within a wider conceptual framework, namely social capital (Sapp et al., 2010). Borrowing the dimensions of social capital, the structural aspect of support can be discussed from horizontal and vertical dimensions. The horizontal dimension refers to the support from the same hierarchical level (coworkers), whereas the vertical one refers to the support from a different or most likely higher position (supervisors) (Kouvonen et al., 2006; Lindstrom, 2008; Oksanen et al., 2008; Sapp et al., 2010). When it comes to functional social support, two types of function have been discussed, namely, helping colleagues to have their tasks accomplished (instrumental support) and providing sympathy (emotional support). As an example of emotional support, communication between stressed employees and other workers at the worksite was investigated (Fenlason & Beehr, 1994), and it actually was found that there may be a buffering effect from coworker support.

Although the buffering effect from social support was confirmed in our analysis as well, ours still underlines the role of schema, which is a stable belief about oneself and others. To make this point clear,

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we regressed stressors, stress responses and social supports on schemas (Table 6). Consequently, almost all the significant regression coefficients for the stress-related variables turned out to be positive as expected, meaning that negative appreciation about oneself and others lead to higher stress. Therefore, our results may possibly suggest that we need to take into consideration not only the type of supports, but also the type of the receiver's personality, i.e., schema. In other words, one can hope to improve stress responses and even reduce worksite productivity loss by an intervention concerning schema. Furthermore, when dropping the schema from independent variables, none of the hierarchical regression analyses for each stress response observed significant interaction terms. This fact tacitly implies that the schema interferes with the buffering effect. Then, it may potentially be quite fruitful to construct models to examine in a more explicit manner the effect of schema on stress reactions, i.e., the buffering effects of stressor, social support, and positive schema, and the exacerbation effects of stressor, social support, and negative schema.

Table 6. The Result of Regression Analysis

BJSQ	BCSS	B	β	R^2	Adjusted R^2
Stressor					
Job Demand	Negative-Self	0.069	0.139†	0.039	0.019
	Positive-Self	0.021	0.047		
	Negative-Others	0.019	0.032		
	Positive-Others	0.024	0.053		
Job Control	Negative-Self	0.043	0.087	0.071**	0.052**
	Positive-Self	0.113	0.253**		
	Negative-Others	0.024	0.042		
	Positive-Others	-0.031	-0.071		
Stress Response					
Lack of Vigor	Negative-Self	0.108	0.172*	0.200***	0.183***
	Positive-Self	0.086	0.152†		
	Negative-Others	0.023	0.031		
	Positive-Others	0.145	0.258***		
Irritability	Negative-Self	0.145	0.245***	0.218***	0.202***
	Positive-Self	0.035	0.065		
	Negative-Others	0.162	0.230**		
	Positive-Others	0.058	0.109		
Fatigue	Negative-Self	0.142	0.242***	0.249***	0.233***
	Positive-Self	0.076	0.142†		
	Negative-Others	0.188	0.270***		
	Positive-Others	0.030	0.057		
Anxiety	Negative-Self	0.139	0.261***	0.289***	0.275***
	Positive-Self	0.057	0.117		

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Table 6. Continued

BJSQ	BCSS	B	β	R^2	Adjusted R^2
	Negative-Others	0.208	0.329***		
	Positive-Others	0.014	0.029		
Depression	Negative-Self	0.266	0.299***	0.334***	0.321***
	Positive-Self	0.058	0.071		
	Negative-Others	0.336	0.319***		
	Positive-Others	0.079	0.099		
Physical Stress Reaction	Negative-Self	0.394	0.269***	0.141***	0.123***
	Positive-Self	0.114	0.086		
	Negative-Others	0.122	0.070		
	Positive-Others	0.114	0.087		
Social Support					
Supervisor Support	Negative-Self	0.082	0.142†	0.100***	0.082***
	Positive-Self	-0.044	-0.084		
	Negative-Others	0.014	0.021		
	Positive-Others	0.146	0.281***		
Coworker Support	Negative-Self	0.078	0.153*	0.176***	0.159***
	Positive-Self	-0.068	-0.147†		
	Negative-Others	-0.023	-0.037		
	Positive-Others	0.201	0.437***		

Note. †: $p < 0.10$; *: $p < 0.05$; **: $p < 0.01$; ***: $p < 0.001$; B: partial regression coefficient; β: standard partial regression coefficient; $R2$: coefficient of determination; Adjusted $R2$: adjusted coefficient of determinant.

All in all, this study demonstrated the following three findings: (1) the worksite productivity is explained mostly by irritability, fatigue and depression, (2) these three stress responses are, in some ways, affected by the negative schema for oneself and others, and (3) the irritability is influenced by the buffering effect between job control and coworkers support. Combining these findings, it seems fair to claim that schema affects the worksite productivity through stress responses. Also, it can be safely deduced that one's mental health and productivity in the occupational setting can be improved through two ways; increasing buffering effect and decreasing the coefficients of the schema variables to the stress responses. That is, one effective way is to organize the situation where employees enjoy better support from their coworkers. This is especially important for those who have only a limited control over their tasks. Another possible intervention is to ameliorate the sensitivity of stress variables to schema, which may be quite challenging. We unfortunately have so far no evident idea to realize this, and leave it open to future work. Nevertheless, we firmly believe that the findings established in our study provide practical implications and contributions.

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Finally, we should note that this study entails some limitations. Since this research was based on a cross-sectional design, we need to implement longitudinal design analysis to enhance and even extend the present study. Additionally, data were collected through self-reported questionnaires, and thus they might be contaminated, more or less, with one's preconceived ideas, that is to say bias. Although this was inevitable since our interest lay in personal perceptions about each component, this can be somewhat compressed by considering the participants' features, e.g., which company they belong to, what is their age/gender, and so forth. Another shortcoming of the present study is that we based it on a relatively small number of samples, which leads to reduced statistical credibility and reliability. Overall, to guarantee the accuracy of the findings made in this study, it would be necessary to enlarge the survey scale and to enrich the variables therein, which are left to a future direction of our research.

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Chapter 17
Re-Conceptualizing Diversity Management: Organization-Serving, Justice-Oriented, or Both?

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ABSTRACT

This chapter highlights how diversity management, a widely practiced management philosophy, has emerged from an original focus of equal opportunity and representation to a focus on a strategic and competitive business opportunity for organizations. However, the adverse, lived experiences that socially marginalized people experience are concealed within business goals despite having their "difference" marketed as a competitive advantage. The aim of this chapter is to conceptualize diversity management as having mutually inclusive, intersecting goals rather than mutually exclusive, competing goals.

INTRODUCTION

Diversity management is a widely practiced management philosophy but in praxis, it is a relatively ill-defined, ambiguous term (Foster & Harris, 2005). In the academic community, scholars have contributed various perspectives of diversity management that have positioned the concept as an organization-serving philosophy that is in direct opposition to safeguarding and protecting the socially marginalized workforce from unjust and uncivil treatment. Socially marginalized refers to a state of reality that exists for some groups of people whom society has categorized as not being the standard by which society recognizes as being the accepted norm (Byrd, 2018); and as result impacts the everyday, lived experiences of the work environment.

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Lived experiences can produce incidents, episodes, and events that socially marginalized people endure and interpret as being demeaning, demoralizing, disrespectful, and prejudicial to their image in the workplace. Consequently, these experiences can be detrimental to self-esteem, self-worth, job satisfaction, and job performance which are all variables that can be career altering and impact career satisfaction.

Lived experiences can occur in any context that an individual performs meaningful work. These types of behaviors and incidents are often perceived as being directly related to an individual's social location (race, sex, age, ability, religion, or other similarly social constructed categories). Therefore, a necessary function and goal for diversity management is recognizing demoralizing behaviors and taking the appropriate steps to expose, correct, and eliminate the source(s) of the behavior. Problematic is that a business opportunity case for diversity fails to capture the everyday, lived experiences of socially marginalized members of the workforce.

As a derivative of the management process, the idea of diversity management or managing diversity underscores the socially constructed meanings of who is categorized as being diverse and incorporates a business rationale that is often antagonistic and sometimes inimical to genuine equality and diversity concerns (Gotsis & Kortezi, 2015). Combining the term diversity with management conjures up the image of historical realities of dominance and subjugation. In this sense, diversity management is a continuance of power over. Furthermore, given the managerial inclination towards control, order, and regulation, the ambition and practices of managing diversity contradict the stated goals and result in less, rather than a more diverse (which is understood to be heterogeneous), pluralistic and varied organization (Risberg & Just, 2015).

In this chapter, two dichotomies of diversity management are highlighted: promoting diversity as a strategic business opportunity to gain a competitive advantage and operationalizing diversity management principles that respond to the lived experiences of socially marginalized groups. The lived experiences of socially marginalized people is a relatively unexplored area of diversity management. Moreover, the ethical, moral, and social obligations of diversity management have received scant attention. In bringing to light this omission, another goal of this chapter recognizes social justice as a necessary outcome of diversity management.

The objectives of this chapter are to:

1. Explain the influencing rhetoric of diversity in the evolution of diversity management;
2. Discuss philosophical assumptions of diversity management;
3. Discuss the dichotomized views of business opportunity and a justice-based perspective;
4. Recognize foundational models, worldviews, approaches, and contexts for applying diversity management;
5. Discuss criticisms that have challenged the application of diversity management;
6. Explore social injustice as a less recognized concept associated with diversity;
7. Present theoretical foundations fruitful for bridging the gap in diversity management studies; and
8. Discuss future research directions for achieving business goals and justice-based outcomes.

Through examining the varying definitions and models of diversity management, and reviewing relevant literature, this chapter will present a social case for diversity and offer how the lived experiences of socially marginalized people has been neglected and left behind in pursuit of an organization-serving philosophy.

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BACKGROUND

The Influencing Rhetoric of Diversity

Diversity has become a ubiquitous term within multiple contexts and is often attached to the concept of inclusion (Lumby & Morrison, 2010). Although diversity research "has become more theoretically rigorous, fuzziness remain around uses of such terms as discourses, rhetoric, and practices in relation to diversity management" (Hearn & Louvrier, 2015, p.24).

In order to conceptualize diversity management, it is helpful to have clearer insight on the term diversity. Simply applied, diversity implies difference. Pointing out difference can actually have the effect of excluding, isolating, and relegating a person or group to a substandard category. A diversity management philosophy suggests difference but it does not necessarily represent or make a call for social justice (Deem & Ozga, 1997). Preference for the term diversity implies a lack of emphasis on social justice or social change which could actually serve to "conceal the operation of systematic inequalities under the banner of difference" (Ahmed, 2007, p. 236). Diversity is now applied in a more popularized, generic way of thinking rather than a conceptualized approach to organizational reality.

The initial application of diversity was in response to legal mandates for equal opportunity. After the Civil Rights Act of 1964, organizations began to implement and organize a variety of programs and initiatives as compliance measurements. Over time, diversity has shifted from equal opportunity for protected status groups (race, sex, religion, national origin, color; and later age, disability, and pregnancy) to incorporate a range of criteria (values, beliefs, education, lifestyles, perspectives, creativity, etc.). The Hudson Institute's Workforce 2000 study (Johnston et al, 2000) predicted that the composition of the workforce would shift toward a minoritized workforce in the 21st century; a prediction that businesses and organizations seized upon. In response, workforce sectors began implementing diversity strategies that would attract and retain this workforce population. Among those strategies were efforts to manage diversity.

Since its initial application to equal employment in the workplace, both researchers and practitioners have sought to understand the concept and strategies for managing its effects (Roberson, 2019). Critics of the concept of diversity suggest how the notion has entered institutions like higher education through the management philosophy in a way that valuing or managing diversity seems to regard diversity as if it were a personification of a human resource (Ahmed, 2007). From another perspective, policymakers or others delegated to write statements or documents on diversity initiatives and the like may find difficulty in effectively doing so without exposing or bringing to light organizational undiscussables. "Organizational 'undiscussables' such as sexism, racism, patriarchy, and violence receive little attention in the literature yet have considerable impact on organizational dynamics" (Bierema & Cseh, 2003, p. 24).

Organizational leaders and members use the term diversity in a generic or non-committal sense partly due to the failure of the term equality to achieve its purpose despite legal mandates. The failure of the term equality can be attributed to the continued and persistent existence of inequalities in work environments and the failure of organizations and institutions to take proactive steps towards social change (Ahmed, 2007). Ahmed says that:

Words such as 'diversity' might allow the organization to accumulate value, by re-branding itself as being diverse or even as being committed to diversity without, as it were, doing anything. Or they might not. They might yet cause more trouble. (p. 254)

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Problematic is also how the term diversity is applied; particularly because "diversity can be defined in ways that can reproduce rather than challenge social privilege" (Ahmed, 2007, p. 240). Generally speaking, diversity is all the ways that people differ (Kandola, 1995; Kandola & Fullerton, 1998). However, when coupled with the term management, diversity becomes ambiguous and even more problematic. Managing implies controlling or being controlled and implies a process that does not allow freedom from constraints. Although the act of managing is a common practice in work environments, combining the term with the term diversity (particularly when it is assumed diversity refers to socially marginalized people) conjures up a manipulative image of those in power or control needing to direct the actions of those in a lesser status. Therefore, diversity management suggests different or varied approaches are needed for individuals or groups in order to achieve positive organizational outcomes (Morrison, Lumby, & Sood, 2006).

For example, is diversity being used as a noun, referring to people who look different? If that is so, diversity management should include actions taken to support socially marginalized groups. Perhaps diversity management refers to the actions that are taken to ensure difference is represented in connection with human resource practices (Stamper, 2012). If this is the case, diversity management or managing diversity could mean ensuring a wider and more representative diverse labor pool to support the overall organization's system. Or diversity management could refer to initiatives and supporting programs that assist minorities in developing realistic self-actualizing goals. If the latter is the case, building a manager's cultural knowledge and understanding of the socio-historical background of diversity and the implications of marginalization, domination, and exploitation using concepts including diversity intelligence (Hughes, 2016) is critical.

The flip side of diversity as an organizational goal (beyond representation) is drawn from the perspective of people experiencing difference. From this perspective, diversity takes on a different meaning and tells a more compelling story:

Left alone, diversity might simply exist with or without our approval, our tolerance or our enacting it. All people have their uniqueness, their differences in thinking, acting, behaving, or being. We as a larger humanity, do not really choose to be diverse, we simply are. History teaches us that left alone, diversity may exist, but inclusion may not. This is our rationale for pushing the meaning of diversity from an adjective, something that describes another object or idea, toward an action. (Winkle-Wagner & Locks, 2014, p. 4)

The term inclusion has emerged as a popular representation of the work environment. The move from diversity to diversity and inclusion represents the degree to which a person feels accepted by the organization's members—the degree to which the sense of being an "outsider looking in" does not exist (Pelled, Ledford, & Mohrman, 1999). Adopting inclusion into statements of diversity implies that organizations are giving employees more autonomy over decisions about their work; employees are kept well informed; and employees have a sense of job security (Roberson, 2004). While the literature reflects the shift toward inclusion in diversity management philosophy, it is questionable as to whether or not organizational actions reflect the same. Diversity management emerged with a legalistic emphasis in response to the Civil Rights Act of 1964. Broadly interpreted, the Civil Rights Act of 1964 prohibited discrimination in employment on the basis of race, color, religion, sex, and national origin and was later amended to include age and disability. Hence, diversity management evolved in a post-civil rights movement era when goals were centered on equal opportunity and representation.

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According to Cross (2000), a pioneer in the diversity literature, diversity management should be concerned with changing cultures that are non-accepting to the changing demographics and the changing roles of people who are perceived as different. With this goal in mind, managing diversity is defined as:

A term which has become widely used to refer to initiatives aimed at helping U. S. organizations come to terms with the rapidly changing demographic of the workforce. The most common, but unacknowledged, connotation of the term is to 'manage white women and people of color' since they are an increasingly larger percentage of workers, the underlying attitude is that it is these new and 'different others' who are 'the problem.' A more appropriate goal is [social] change---that is ameliorating racism, sexism, and other forms of discrimination and oppression in order to create organizations and a society in which all people have equal opportunity. (Cross, 2000, p. 224)

The term managing diversity and diversity management are used interchangeably in the literature to denote a management philosophy that is intended to reflect differences of people within the workforce. There are numerous and varying definitions of these terms as described in Table 1. Notably absent from these definitions is recognition of human respect and dignity.

Table 1. Selected defining constructs of diversity management from academic literature

Arredondo (1996)	A strategic organizational approach that represents a shift from affirmative action assumptions towards inclusive management practices that reflects the diversity of the workforce and its potential.
Cox & Blake (1991)	Managing HR systems in hiring, training, compensation, promotion, and performance; greater career involvement for women; issues emerging from heterogeneity of the workforce; education programs; cultural differences; and mindsets about diversity.
Cross (2000)	Ameliorating racism, sexism, and other forms of discrimination and oppression in order to create organizations and a society in which all people have equal opportunity.
Dessler (2012)	Maximizing the potential benefits that diversity represents and minimizing the potential barriers and biases that can hinder organizational performance.
Foster, C.	Diversity management is a means of managing customer and employee differences for the benefit of the organisation.
Mor Barak	Voluntary organizational actions directed toward inclusion of people from various and diverse backgrounds into the organizational structure through planned policies and programs.
Snell & Bohlander (2013)	Awareness of characteristics common to employees; managing the individual as well as the employee; supporting, nurturing, and utilizing individual differences to the advantage of the organization.
Thomas (1991, 1993)	The process of creating and maintaining an environment that naturally enables all participants to contribute to their full potential in a focused pursuit of organizational objectives.

For the purposes of this chapter, Cross' (2000) definition will be the fundamental guiding construct for diversity management.

Philosophical Assumptions of Diversity Management

Philosophically speaking, the expression diversity management lends itself to contradicting interpretations. While diversity management is an established managerial ideology, the underlying philosophical

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assumptions associated with the issues that emerge from human difference in work environments remain unexplored (Costea & Introna, 2008). Particularly since "human difference is not manageable in the sense in which managerial ideology conceptualizes it in diversity management" (Costea & Introna, 2008, p. 1). Furthermore, capturing human difference under the sphere of a managerial ideology circumvents and dilutes the achievements gained from decades of civil rights advocacy.

According to the philosophy of Heidegger (1975), human difference informs the way that people are situated in the world. In the context of work, human difference can control, exploit, and serve as a prejudging criteria by which people are treated. As a result, lived experiences can be a direct outcome of one's socially marginalized status. From this philosophical reasoning, human difference is a given, and should not be treated as a problem or process that needs to be managed. Cherwin (2010) notes that managing diversity should also consist of understanding how to relate to differences and how to relate to people who are different.

Ignoring the problems that can develop from human difference is counter to the purpose for which diversity management was conceptualized. Consequently, the philosophical assumptions of diversity management and its critical role of accountability in countering the lived experiences of the social injustice in the workforce is generally silent. This lack of recognition and maintaining silence on the organizational "undiscussables" (racism, sexism, ableism, etc.) (Bierema & Cseh, 2003) is either intentional because it is good business sense; or unintentional because there has been a lack of social justice education to supplement knowledge of legal mandates.

A diversity management philosophy implies difference but it does not necessarily represent or make a call for social justice (Deem & Ozga, 1997). Preference for the term diversity implies a lack of emphasis on social justice or social change which could actually serve to "conceal the operation of systematic inequalities under the banner of difference" (Ahmed, 2007, p. 236).

Given that diversity management has undergone conceptual meanings and applications, the workplace would be better served by listening to those who are having the experiences in order to gain a more informed meaning for this management philosophy (McDonald, 2010). In view of the variations of definitions and models of diversity management, there needs to be greater insight of how diversity management is applied in practice.

DIVERSITY MANAGEMENT FOR BUSINESS OPPORTUNITY

Diversity is viewed as organizational discourse that favors economic goals at the expense of societal and workplace issues (Gotsis & Kortezi, 2015a). Since the inception of diversity as a response to the Civil Rights Act of 1964, organizations, institutions, and businesses have begun to sell diversity as a marketing tool, placing greater emphasis at the organizational level and capitalizing on diversity as a competitive advantage and the benefits derived from diversity as human capital. From this perspective, diversity management can be considered an economic stimulator.

Mapping the evolution of diversity management from its historical conception through more contemporary business representations, McDonald (2010) concluded that diversity management philosophy has not remained grounded in the social and historical essence of diversity or difference. One possible reason is the need to retain a positive thinking approach to difference. Recognizing that difference should be portrayed as valued, appreciated, celebrated, and promoted served as the beginnings of the business opportunity aspect of diversity management.

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Managing diversity became a business necessity, not only because of the nature of labor markets, but also because a more diverse workforce was thought to produce better business results. Exploiting the nation's diversity was viewed as key to future prosperity. Ignoring the fact that discrimination limits a society's potential because it leads to underutilization of talent pools was no longer practical nor feasible. (Herring, 2009, p. 210)

This emphasis on diversity management as a business opportunity is in direct opposition to the initial focus on equal rights in employment as mandated by the Civil Rights Act of 1964.

Implemented during the Johnson Administration in 1965, the original impact of affirmative action legislation served to make forced adjustments to the number of underrepresented groups in the workforce. The consequences, however, have served to stigmatize diversity management and placed negative perceptions upon why the diversity management is practiced. Although some aspects of affirmative action are no longer enforced in several states (California, Texas, Michigan), the question is whether or not non-enforcement has assisted or hindered the progress of diversity management in the United States (Scott, 2014)? Emphasizing diversity management as a business opportunity also projects an organizational image that appears to promote diversity by recycling ideas and practices (strategic, organization advantage, performance, culture, strategic, organizational structure, organizational objectives) (Costea & Introna, 2008). While diversity of ideas and practices are important, they do not adequately or appropriately capture the lived experiences and realities that socially marginalized people encounter in the workplace. Cross (2000) says that the practice of diversity management should include:

...an understanding of the sociopolitical and historical realities of discrimination and oppression; knowledge of how organizations and systems work, and how they can change; competence and experience in helping adults learn; and personal understanding of one's self in relation to others, especially across differences of race, gender, sexual orientation, and ability. (p. 140)

Janssens and Zanoni (2005) refer to diversity management as highly contextualized. The "way in which work is organized strongly affects the company's understanding of diversity as well as its approach to diversity management" (p. 312). The demographic composition of an organization's workforce also plays an influential role in the way diversity is managed. Consequently, diversity is relevant and actively managed to the extent in which the nature of work and socio-demographic differences contribute to or hamper attaining an organization's goals.

Diversity management now plays a strategic role in formulating policy in human resource functions like recruiting, training, career development, performance appraisal, mentoring, and coaching (Bassett-Jones, 2005; Prasad, Prasad, & Mir, 2011). However, vital parts of the process such as the context, language, and culture that are specific to each organization significantly influences the way managers and employees interact and engage each other in these functions. Furthermore, it is the "aggregate effect of the attitudes, skills, and behaviors of individual managers that determines the extent to which organizations are able to sustain high commitment within a diverse workforce" (Bassett-Jones, 2005, p. 170). In recent years, managing diversity has represented a strategic attempt to integrate organization-level strategies to leverage diversity as a competitive advantage (McDonald, 2010). The trend towards a competitive advantage is in sharp contrast to the original legalistic focus of equality and anti-discrimination. In essence, the diversity management philosophy continues to be contested terrain (Linnehan & Konrad, 1999).

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Missing from the various ways of defining and thinking about diversity management are ethical, moral, and social principles that convey accountability for behaviors, attitudes, and uncivil treatment that can be demoralizing, demotivating, and devaluing. This raises the question, what is the role of diversity management in addressing social problems—problems like racism, sexism, ableism, ageism, and all those other biased ways of thinking that hinder and impair an individual's ability, capacity, and endurance to perform and create meaningful work? Are organizations choosing to ignore the ugly side of diversity management because it does not fit their business opportunity model? These are dilemmas that do not fit neatly into a business opportunity model. Diversity management as a business opportunity does not provide a focused agenda that emphasizes human dignity and respect. Failure to do so articulates a managerial philosophy of diversity that is inconsistent with what the purpose for which the idea evolved (Costea & Introna, 2008; McDonald, 2010).

While the business opportunity case for diversity makes good sense for attracting, retaining, and developing a diverse workforce, an ethical, moral, and social responsibility should not be disregarded (Mor Barak, 2013). Finally, the idea that diversity has to be managed as a business opportunity is exploiting and demoralizing to human dignity and self-worth. The reality is, however, that as long as diversity sets people apart as being "different" and different produces perceptions of "not equal" the diversity dichotomy will continue. For this reason, a diversity management philosophy grounded in social justice is needed (Gilbert, Stead, & Ivancevich, 1999). "The social justice perspective calls for addressing discrimination and oppression head on; identifying what they are, where they are, how they work, what mechanisms perpetuate them, and how to eliminate them" (Miller, 1994, p. xxvii). Although it is unlikely that the term diversity management will become obsolete in the coming years, a social justice perspective captures ethical, moral, and socially responsible principles of a diversity management philosophy. Hearn and Louvrier (2015) insist that diversity and diversity management discourse should be examined more broadly and not through arguments for or against a business case or a social justice case. Rather, studies should be open to identifying the various ways that diversity and diversity management discourse produces new knowledge beyond the current debate of opportunity versus justice.

Diversity Management: An Ethical, Moral, and Justice Based Perspective

Diversity scholars have expressed disappointment with the business opportunity case for diversity based on the assumption that diversity improves the bottom line and argue that this philosophy does not capture the organizational culture and principles of business moral reasoning (Wallace, Hoover, & Pepper, 2013). Business moral reasoning applies to values and moral principles; providing a foundation and rationale for managing problems that relate to people. Managing problems that relate to people in organizations means that executive leaders and other decision makers will be confronted with issues that emerge from issues such as racism, sexism, ageism, ableism, etc. It means that executive leaders and other decision makers will be faced with making fair decisions in terms of hiring, recruiting, training, promoting, and advancing the careers of all of an organization's members. Furthermore, it means executive leaders and other decision-makers' personal morals and values will play an integral role in the shaping the decision-making process (Hughes, 2018).

Ethical, moral, and social frameworks provide executive leaders and other decision-makers with a specific set of guidelines to draw from in order to make more informed decisions about managing problems and people. If organizations (through actions of the people) truly value diversity, diversity management principles will be centered around an ethical, moral, and social responsibility. For this

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reason, a diversity management philosophy needs to be built upon ethical, moral, and social frameworks for doing the right thing through showing socially marginalized employees that their contributions are valued within organizations. Ethical frameworks help explain how organizations apply values (Wallace, Hoover, & Pepper, 2013).

Traditional ethical frameworks commonly discussed in the managerial literature are: ethics of utility (utilitarian); ethics of rights, ethics of justice, ethics of virtue, and more recently, the ethics of care. For the purposes of a diversity management philosophy, the ethics of utility is rejected, as it offers a contradictory rationale for promoting and valuing the differences of people. The ethics of utility (utilitarian) framework supports the "greatest good for the greatest number" principle. However, for executive leaders and other decision makers, applying this principle in terms of socially marginalized groups may undermine the intent for equal representation unless they value and reward the difference of socially marginalized individuals and reward them at the same level as others who are different. Socially marginalized employees are not promoted to executive leadership positions and with the changing demographics in society, the greatest number is changing. Therefore, for the purposes of this chapter, the ethics of rights, ethics of justice, ethics of virtue, and the ethics of care will be considered as appropriate frameworks for a diversity management philosophy.

Resolving problems, issues, controversies, and dilemmas that emerge from managing diversity requires an appeal to values (Velasquez, Andre, Shanks, S. J., & Meyer, 1996). First, the ethics of rights, with roots in the philosophy of Immanuel Kant, is based on the principle that every individual have basic fundamental rights and as such have the right to make their own choices. Second, the ethics of justice, with roots in the philosophy of Aristotle, asks the moral question, "How fair is this action? Does [this action] treat everyone in the same way, or does it show favoritism and discrimination?" (p. 3). From a values-based perspective, a decision made that shows favoritism and discrimination is unethical. Third, the ethics of virtue, considers the personal traits, qualities, and values that cause a person to act in a certain way. From this perspective, the good values that a person prescribes to that causes that person to act in a way that is good as opposed to vices that cause that person to act in a way that is not, plays a critical role in decision-making.

Finally, the ethics of care, emerging from a feminist perspective, is grounded in valuing relationships (Gilligan, 1982/1993).

Moral problems are problems of human relations…relational ethic transcends the age-old opposition between selfishness and selflessness, which have been the staples of moral discourse. The search on the part of many people for a voice which transcends these false dichotomies represents an attempt to turn the tide of moral discussion from questions of how to achieve objectivity and detachment to how to engage responsively and with care. (p. xix)

Of the aforementioned frameworks, the ethics of care grants a new way of thinking about diversity management. At the individual level, care is demonstrated by granting voice, empowerment, and the courage to act; thereby evoking the potential for social change. At the larger organizational level, care should be enacted and accepted "with an understanding of the particular views and needs of all parties and a concern for their safety and well-being" (Wallace, Hoover, & Pepper, 2013, p.320). To be ethically, morally, and socially responsible, social justice should become an intended and expected outcome of a diversity management philosophy. Furthermore, a diversity management philosophy that is not grounded in an ethics of care for all people, fails to achieve a goal of business opportunity or equality.

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FOUNDATIONAL MODELS, WORLDVIEWS, APPROACHES, AND CONTEXTS FOR APPLYING DIVERSITY MANAGEMENT

It is unrealistic to view diversity management through a single lens. Managers face situations, challenges, problems, etc., that require multiple ways to critically analyze and respond. In this section, foundational models, worldviews, approaches, and the role of context for applying diversity management are discussed.

Foundational Models

Cox' (1991) multicultural organization is a benchmark in the managing diversity philosophy. Cox pointed out that as the workforce becomes more diverse, this diversity will substantially benefits organizations in terms of decision-making, creativity, innovation, and more successful strategies for marketing. However, he predicted that greater diversity yields greater potential for conflict. According to Cox, a multicultural organization is "characterized by pluralism, full integration of minority-culture members both formally and informally, an absence of prejudice and discrimination, and low levels of inter-group conflict"(p. 46). If these conditions are met, whereby all members can contribute to their maximum potential, valuing diversity can be fully achieved. Although Cox did not explicitly identify social justice outcomes, the implication is subtly implied.

Another early diversity model that was designed as a management response to the workforce demographic shift was the Managing Diversity Intervention model (Cross, 2000). The model was designed as an organizational intervention for business leaders who were trying to cope with the demands of the changing demographics as well as the changing nature of work. The goal of the model was to "provide vision, direction, and a sense of purpose and meaning to the amelioration of racism, sexism, heterosexism, and other forms of oppression" (p. 2). Similarly, leading diversity practitioners during the early days of diversity management responded to the growing needs of management and leaders in understanding how to effectively "do" diversity (Morrison, Ruderman, & Hughes-James, 1993).

Worldviews

Jack (2000) identified four overlapping, continuous perspectives of diversity management that created distinct schools of thought: political, economic, critical, and demographic perspectives. From a political perspective, diversity management was viewed as a politically correct alternative to affirmative action. The economic perspective sought to sell the idea of a competitive advantage for representing organizations in a global marketplace. Diversity management turned to a critical focus when problems were encountered as organizations sought to implement diversity related initiatives, in particular, diversity training. Majority group members, white males in particular, responded with resentment, antagonism, and even frustration—feeling subjected to unwarranted accountability for the plight of social groups in the organization (Peterson, 1999). Finally, from a demographic perspective, the Workforce 2000 (Johnston & Packer, 1987) report created a startling awareness for business and academics that the workforce was undergoing a dramatic demographic shift which would call for the appropriate management response.

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Approaches

Lloyd-Jones and Worley (2014) suggest that diversity management can be best understood by considering four approaches: assimilating, accommodating, celebrating, and educating. Assimilation is characterized by organizations efforts to correct imbalances within diverse groups. Accommodation uses a neutralizing approach and promotes ideals such as the color blind effect. Celebration of difference using a minimizing effect; celebrating difference has the effect of overlooking the issues emerging from difference. Education is a process of discovering the organization's unique needs and applying methods for what works best. Central to the process of education is not simply acquiring information but what is done with the information after it is acquired.

The Role of Context

While the literature appears to provide an abundance of definitions, instructions for acting upon and bringing these goals to fruition in various organizational, institutional, and workforce contexts is not clear; particularly because diversity management may have different meanings in institutional settings (universities, etc.) as opposed to organizational settings (corporate), and workforce (public service) sectors. Although defining constructs of diversity management are prevalent in academic literature, diversity management goals are represented in various contexts of work that are not universally representative. The diversity management literature implies that application of diversity strategies are universal throughout organizations, thereby neglecting the role of context. Syed and Ozbilgin (2009) suggest that "effective diversity management is most likely to be realised in contexts where there is multilevel structural and institutional support" (p. 2436). Moreover, professional contexts often recognized for achievements and progress toward diversity and inclusion goals (MAPI, 2016a). Contexts such as manufacturing and retail are often under-represented in the diversity management literature. While the manufacturing sector does recognize the strategic importance of diversity efforts, one possible accounting for under-representation in the diversity management literature is that competing priorities in this sector diverts attention from diversity (MAPI, 2016b). In the retail sector, diversity management includes managing customer and employee differences for the benefit of the organization (Foster, 2005) which re-directs diversity management outcomes.

Table 2 represents various organizational contexts that market diversity and diversity management as part of their industry goals.

A silent topic that is not within the scope of this chapter, but has merit to mention in respect to context, is that of occupational segregation. Occupational segregation is grouping or categorizing of minoritized populations into domestic, service, or undervalued work roles (Solomon, Maxwell, & Castro, 2019). In these contexts, it is questionable how diversity management applies: is diversity managed for the purpose of expanding opportunities or is diversity simply acknowledged but to do, maintains the historical, servitude role of minoritized individuals and groups? Social injustice in these contexts is an enduring consequence.

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Table 2. Selected diversity management goals in various contexts

Context	Goals	Source
Corporate	Talent development, leadership, commitment recruiting efforts, supplier diversity	DiversityInc www.diversityinc.com
Government	Government Process intended to create and maintain a positive work environment when the similarities and differences of individuals are valued, so that all can reach their potential and maximize their contributions to an organizations strategic and objectives.	U.S. Department of Veteran's Affairs Office of Diversity & Inclusion www.diversity.va.gov
Healthcare	Commitment at all professional levels through an awareness of diversity issues and hiring practices that are essential to attracting a diverse workforce.	American College of Healthcare Executives www.ache.org
Military	Focus on emerging talent to ensure, attract, recruit, develop, and retain a highly skilled military force capable of meeting mission requirements	Office of Under Secretary of Defense www.diversity.defense.gov
Retail	Organizational approach that recognizes, values and harnesses a broad range of individual differences in customers and employees and by treating people differently according to their needs business advantages can be realized.	Foster, C. (2005). Implementing diversity management in retailing: exploring the role of organisational context. *The International Review of Retail, Distribution and Consumer Research*, *15*(4), 471-487.
Manufacturing	Modern manufacturing is a diverse and inclusive community, embracing and supporting the creativity that each individual can bring to building something bigger than themselves. Strategies designed to recruit, engage, and retain a diverse workforce.	Be You in Manufacturing: https://www.creatorswanted.org/be-you-in-manufacturing/manufacturing-workforce-diversity-inclusion

Criticisms of Diversity Management

There have been several criticisms of the diversity management philosophy. First, diversity management is applied to four key areas that are evaluated in relation an organization's diversity efforts: talent management, talent development, leadership commitment, and supplier diversity (DiversityInc, 2014). While these areas are key for creating an organization that demonstrates a responsibility for supporting diversity, a commitment to social justice is absent (Byrd, 2012). Lacking are actions to address discrimination, prejudice, bias, disrespect, and experiences of social injustice towards marginalized groups.

Second, from a reformist perspective, diversity management has been criticized for failing to represent opposing viewpoints of multiculturalism and meritocracy (Prasad, Prasad, & Mir, 2011). While these principles are necessary, diversity management in practice needs to be "understood as a product of not only of reformist elements and impulses but also of a distinct institutional field with well-defined dynamics and facing multiple forces and pressures" (p. 719).

Third, diversity management has been conveyed as a management function that can be a challenge to managers (Mor Barak, 2013). Addressing diversity management as a challenge conveys the message that it is problematic or difficult, which conveys a contradictory meaning. For example, if diversity is a challenge, organizations that promote diversity, embrace diversity, celebrate diversity, and appreciate diversity convey the message that it is a challenge to enact these objectives.

Fourth, early advocates and supporters of diversity management had hoped the movement would improve the experiences of marginalized groups. To an extent, diversity management has succeeded in raising awareness of diversity related issues. However, the new language and rhetoric of diversity

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is shifting from the original mission of equal opportunity and improving the workplace experience of historically excluded social groups (Mor Barak, 2013).

Fifth, indicators are that diversity management has been a trend-setter as organizations seek to replicate popular trends. A study of diversity management practices in six organizations revealed that organizations were quick to mirror and imitate what is cutting-edge in diversity management practices rather than pursue meaningful organizational change (Prasad, Prasad, & Mir, 2011). In view of the uniqueness of organizations, imitating and replicating the latest trends is ineffective and has little perceived value. While organizations have demonstrated trend-setting tendencies, less attention has been given to assessing diversity efforts (Comer & Soliman, 1996). Recruiting and hiring minorities is generally highly favored for statistical reporting purposes; however, following up after hiring and evaluating how diverse groups are acclimating to the new culture, or assessing needs for developing skills does not generally take priority in diversity management programs (Hughes, 2018).

Kanter (1977) advanced a different perspective of diversity management. The push for diversity also meant a push for more diversity among managers—in particular, women and minorities. However Kanter was advocating for more representation rather than the resistance to accepting a new wave of leadership which created a new interpretation. Managers who were themselves diverse had to "manage" a heterogeneous workforce amid the discrimination, bias, and prejudice that was directed towards them based on their social identity. According to Kanter (1977) critics argued that human resource approaches should have been directed more towards affirming diversity rather than affirmative action.

Instead of finding slots for women and minorities and helping them adjust themselves to fit the dominant style, the argument run, companies should acknowledge and embrace a range of styles. Companies should learn to value difference, not suppress them. (p. 315)

Acknowledging there are social and other influencing factors that limit representation of minoritized groups, using the concept of diversity from an equality perspective may be risky if people are not ready for higher managerial roles. The counter argument might be that diversity management in this respect is accountable for preparing minoritized groups from advancing to top management positions. Yet, while preparedness to assume top managerial jobs should be a goal of diversity management, "new concerns about hidden diversities (for example sexual orientation) …means that occupation, roles, and career trajectories that were once restricted to a single group (i. e. white males) are now open to many" (Baruch, 2004, p. 66).

Another less understood and discussed aspect of diversity management and the lived experiences of socially marginalized people is the perception of presumed incompetence that is connected with affirmative action (Heilman, Block, & Lucas, 1992). The perception being that if an individual is truly qualified, they could be hired without benefitting from affirmative action. The real problem is that organizations have marketed themselves as being equal opportunity employers without realizing how this might affect the way people are perceived. Hence diversity management goals have not been forward thinking in making sure the organizational environment is ready and is maintaining readiness through specific actions and requirements of those in power.

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Social Injustice: The Dark Side of Diversity

A prerequisite for effective practice of ethical, moral, and socially responsible diversity management is accountability for maintaining a non-hostile work environment. The Federal Communications Commission (FCC) (n. d) defines a hostile work environment as harassment that "occurs when unwelcome comments or conduct based on sex, race or other legally protected characteristics unreasonably interferes with an employee's work performance or creates an intimidating, hostile or offensive work environment" (www.fcc.gov). Although diversity management goals promote diversity, contradicting this claim in practice is evidenced by the growing number of lawsuits handled by the EEOC (Hughes, 2012). These lawsuits depict work environments as hostile locations where socially marginalized people are subjected to cruel remarks, uncivil treatment, and other indignities that can destroy self-worth. Typically, litigation brings into question diversity management mechanisms as a remedial solution. This is the dark side of a diversity management philosophy that is concealed in the business opportunity model. It is also a less recognized perspective of diversity management that forces those in power to be accountable for social injustices that can limit performance and career satisfaction. Satisfying (or unsatisfying) lived experiences of socially marginalized people are often dictated by those in leadership positions with power. Compounding these experiences are situations whereby those in in leadership positions with power cause the problem or contribute to the problem. Nonetheless, management is responsible and accountable for being aware of situations and conditions that could impede top performance of people who are socially marginalized. There is a tendency for diversity management programs to continue to represent their goals from a representation perspective (which ties it to affirmative action) (Pitts, 2009) or performance (Fernandez, 1993) with less attention to fair treatment and social justice. However, diversity and diversity management are directed more towards representation rather than minimizing unjust behaviors, attitudes, and (mis) treatment of socially marginalized groups.

In reality, more diversity among the workforce translates to more experiences of marginalization; hence social injustice through discriminatory actions. Socially marginalized people face social injustices that can be detrimental to their psychological and physical well-being which places substantial accountability at the organizational level. Social injustice is a violation of one's civil rights that could inhibit the ability to realize full potential and ultimately impede one's career success. As an organization serving philosophy, diversity management has failed to uphold an ethical, moral, and social obligation to the dignity and self-worth of socially marginalized people.

Defining constructs and principles of diversity management should include and respond to the challenges, dilemmas, and the lived experiences of the socially marginalized. A troubling example is the Court findings of racial discrimination and abuse at the University of California at Los Angeles (UCLA). An investigative team found that the university was not practicing anti-discrimination policies which were vague and remedial processes were not clearly defined (Pleasant, 2013). Most appalling was the disrespectful treatment of a Black American surgeon/faculty member whose face was photo-shopped onto the body of a gorilla with his boss, a White man, sodomizing him. This picture was displayed at a graduation party with faculty as well as students in attendance. Prior to this incident, the doctor had complained about harassment and mistreatment by his supervisor, a woman of Asian descent, who was reported to have referred to the doctor on several occasions as an affirmative action hire.

The continued mistreatment of socially marginalized people articulates the need for diversity management programs to integrate goals that recognize organizational social justice. Organizational social justice is the "ideology that organizations operating through a representing agent seek to achieve a state

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whereby all individuals feel included, accepted, and respected, and whereby human dignity as well as equality are practiced and upheld" (Byrd, 2012, p. 120). In doing so, diversity management emphasizes the experiences of the individual. Placing diversity and hence diversity management within a framework for social justice centralizes the purpose and outcome. Diversity management in this sense is not simply a management action; it is a shared action that allows socially marginalized people to give voice to their issues. Diversity, and hence the management of diversity, is more powerful when placed within the stories of those having the experience.

Diversity management goes beyond valuing and appreciating a diverse workforce, it includes being respectful of the person. "The reasons for implementing diversity management include having to adapt to the new reality of a workforce that is increasingly diverse, doing the right and moral thing, and gaining a competitive advantage" (Mor Barak, 2013, p. 235). Therefore, diversity management efforts should represent a responsibility to do the right thing and be accountable to people being treated with dignity and respect.

SOLUTIONS AND RECOMMENDATIONS

Bridging the Theoretical Divide

While diversity management has become an established managerial ideology, the underlying theoretical and philosophical assumptions of issues and problems emerging from human difference remain unrepresented (Costea & Introna, 2008). Resolving this tension between the two dichotomies – recognizing the business opportunity or responding to the lived experiences of socially marginalized groups—could be achieved through more integrative theoretical approaches (Shore, Chung-Herrera, Dean, Ehrhart, Jung, Randel, & Singh, 2009).

An example of an integrative approach is linking dignity and respect for human issues and the human experience with organizational values. Current approaches to management studies acknowledge underlying management values and interest rather than gaining knowledge of reality (Alvesson & Willmort, 1996). Although companies use formal policies, statements of values, diversity statements, etc. "the evidence is unambiguous that these types of actions are only starting points for creating positive organizational environments for diverse people" (p. 128). On the otherhand, using imagery (photographs) with textual content that is easily accessed demonstrates an ethic of care that conveys a relational message between people and the organization (Wallace, Hoover, & Pepper, 2013).

Critical management studies have advanced research and theory of diversity management by disrupting and countering the superficial claims of valuing and embracing diversity by emphasizing the historically constructed relations of dominance and subordination, as well as the ensuing experiences of the socially marginalized (Gotsis & Kortezi, 2015a). Klein, Tosi, and Cannella (1999) say that:

Multilevel theories begin to bridge the micromacro divide, integrating the micro domain's focus on individuals and groups with the macro domain's focus on organizations, environment, and strategy. The result is a deeper, richer portrait of organizational life—one that acknowledges the influence of the organizational context on individuals' actions and perceptions and the influence of individuals' actions and perceptions on the organizational context. (p. 243)

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Critical theory is useful for explaining why management studies would benefit from acquiring a justice-based case for diversity as well as a business opportunity case. Critical theory offers an epistemological worldview of power structures and is aimed at decreasing domination and increasing freedom. Moreover, critical theories (e. g. Critical Race Theory) have emerged in association with social movements (e. g. Civil Rights movement) and have been significant in explaining the pervasive nature of social injustice (Yee, Ying, & Khin, 2014). Fundamental to the study of diversity and the application of diversity management, critical theory "examines and criticizes societal issues such as exploitation, asymmetrical power relations, distorted communication and false consciousness" (p. 19).

Diversity management is typically situated within specific types of human resource functions (e. g. recruiting, selection, training, mentoring, promoting, networking, etc.). Human resource practices operate within an organization's formal system. As a subsystem of the formal system, diversity management can be understood as a "formalized organizational system, process, or practice developed and implemented for the purpose of effectively managing a diverse workforce" (Yang & Konrad, 2011, p. 7) as appropriate to specific functions. Janssens and Steyaert (2019) advance a theory of practice based on five principles:

- Diversity as a social phenomenon is relationally constituted.
- Social life in a diverse organization is produced through practices, not only diversity management practices but also other management practices.
- A diversity practice is accomplished through connecting bodies, tools and artifacts, and discursive resources.
- A diversity practice is situated in time and space since actions and practices are connected in a nexus.
- The social order of a diverse organization is explained through observing and witnessing the practices in action. (p. 524)

As an application of management practice, Byrd and Sparkman (manuscript, submitted) propose that the business case for diversity and the justice oriented case for diversity, are not competing goals, but rather intersecting goals. These authors suggest that in pursuing business goals, an ethics of rights and an ethics of care should be exercised to maintain a social order of dignity and respect. Furthermore, given that social injustice is enacted as discrimination, bias, prejudice, stereotyping, incivility, and the like, that are ultimately viewed as pervasive acts to the social order, it is reasonable to consider business goals and justice outcomes goals as mutually inclusive.

FUTURE RESEARCH DIRECTIONS

Social science scholars/researchers and management scholars/researchers pursue studies of diversity and diversity management within the scope of their respective disciplines. Integrated perspectives are needed to explain how diversity (in terms of representation) can, at the same time, create consequences that are demeaning, unjust, and disrespectful to those who are categorized as being the diverse workforce. To ease the tension and perhaps bring clarity to the ambiguity of diversity and diversity management, "researchers must gain a critical understanding of the different kinds of paradigms that inform [diversity] research" (Broom & Willis, 2007, p. 28) through greater collaboration. Collaboration among researchers speaks to the ubiquitous presence of diversity and its application across multiple contexts.

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Equally important is the increased understanding of organizational leadership to the socio-historical and political implications that stem from human difference. To achieve this, incorporating social justice within leadership and management development programs is fundamental to bridging the gap in diversity organizational goals. The challenge is developing the mindset of leaders and managers in organizational settings towards humanistic as well as opportunistic goals (Byrd & Sparkman, manuscript submitted). An emerging concept that speaks to organizational leaders' need for historical and cultural understanding is diversity intelligence (Hughes, 2016). A basic assumption of diversity intelligence is that mainstream literature recognizes emotional, cultural, and intellectual intelligences as indicators of a leader's effectiveness. Absent from these common assessments is the leader's knowledge and competence of the historical background of social marginalization or the lived experiences stemming from social injustice in the workplace.

Furthermore, a diversity management philosophy speaks to the social location value of the socially marginalized (Hughes, 2012). Combined with the different experiences and perspectives, "social locations hold promise for generating a better understanding of social systems, especially systems of social oppression" (Robertson, 2013, p. 299). Given that diversity management has been informed by multiple conceptual meanings and applications, advancing knowledge and perhaps eventually theory is better served through collaborative research and professional development for organizational leaders.

CONCLUSION

This chapter explained the evolution of the diversity management philosophy; identified varying definitions of diversity management; examined criticisms of diversity management; discussed diversity management as a business opportunity; recognized ethical, moral, and social obligations of diversity management; discussed current models, worldviews, approaches, and contexts of diversity management, explored the dark side of diversity through a discussion of social injustice, and explored future research directions in diversity management. The goal has been to represent diversity management as an organizational serving philosophy that has failed to uphold an ethical, moral, and social obligation to the dignity and worth of a socially marginalized workforce. Hence this chapter has sought to coalesce diversity management and social justice.

Embedded within discussions of diversity management are the adverse lived experiences that socially marginalized people endure as they go about their attempt to perform their jobs. In many cases, despite having earned impeccable credentials, having earned a quality education, and having invested years of experience at one's place of work, socially marginalized people continue to face disrespectful treatment despite having their "difference" marketed as a competitive advantage. True competitive advantage must reflect valuing all diverse employees for all of their contributions to the workplace not just their visible presence (Hughes, 2019).

Varying definitions of diversity and diversity management were presented in this chapter. The guiding defining construct for diversity was grounded in the work of Cross (2000), an early pioneer in the study of diversity, who identified social change as an appropriate goal for diversity work. When combining the terms diversity and management, it challenging, at the least, to ignore the social injustices endured in the pursuit of business goals.

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Organizational leaders are either uninformed of social justice problems or have chosen to ignore the dark side of diversity as a management priority. A diversity management philosophy seems to be incomplete without some inclusion of social justice. Therefore, diversity management as a guiding organizational philosophy should reflect a more integrative approach to reflecting not only organizational goals but also including values based principles that uphold the dignity and worth of all people.

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KEY TERMS AND DEFINITIONS

Diversity Intelligence: The capability of leaders and followers to value all employees and their contributions despite differences based on protected class status.

Diversity Management: Management philosophy that includes "an understanding of the sociopolitical and historical realities of discrimination and oppression; knowledge of how organizations and systems work, and how they can change; competence and experience in helping adults learn; and personal

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understanding of one's self in relation to others, especially across differences of race, gender, sexual orientation, and ability" (Cross, 2000, p. 140).

Diversity Social Climate: Organizational culture supported by management's proactive stance against social injustice.

Ethics of Care: Moral problems are problems of human relations…relational ethic transcends the age-old opposition between selfishness and selflessness, which have been the staples of moral discourse. The search on the part of many people for a voice which transcends these false dichotomies represents an attempt to turn the tide of moral discussion from questions of how to achieve objectivity and detachment to how to engage responsively and with care (Gilligan, 1983, p. xix).

Ethics of Justice: Asks the moral question, "How fair is this action? Does it treat everyone in the same way, or does it show favoritism and discrimination?" (Velasquez et al., 1996, p. 3).

Ethics of Rights: Based on the principle that every individual has basic fundamental rights and as such have the right to make their own choices.

Ethics of Virtue: Considers the personal traits, qualities, and values that cause a person to act in a certain way. From this perspective, the good values that a person prescribes to that cause them to act in a way that is good as opposed to vices that cause that person to act in a way that is not, play a critical role in decision-making.

Hostile Work Environment: Occurs when unwelcome comments or conduct based on sex, race or other legally protected characteristics unreasonably interferes with an employee's work performance or creates an intimidating, hostile or offensive work environment.

Inclusion: The degree to which the sense of being an outsider looking in does not exist (Pelled, Ledford, & Mohrman, 1999).

Lived Experiences: Refers to incidents, episodes, events, and first-hand accounts that socially marginalized people endure and interpret as being demeaning, demoralizing, disrespectful, and prejudicial to their image in the workplace.

Managing Diversity: An intervention to ameliorate racism sexism, and other forms of discrimination and oppression in order to create organizations and a society in which all people have equal opportunity. The most common but unacknowledged connotation of the term is to "manage white women and people of color" since they are an increasingly larger percentage of workers, the underlying attitude is that it is these new and different others who are the problem (Cross, 2000, p. 224).

Occupational Segregation: The grouping or categorizing of minoritized populations into domestic, service, or undervalued work roles (Solomon, Maxwell, & Castro, 2019).

Presumed Incompetent: Perception that an individual's work is less superior because of their social affiliation and the assumption that they are placed in prestigious or high-profile jobs because of affirmative action.

Social Injustice: A violation of one's civil rights that could inhibit the ability to realize full potential and ultimately impede one's career success.

Socially Marginalized: Individuals who are subjected to unequal (and often unjust) treatment based on their social location without considering their individual knowledge, skills, and abilities (Byrd, 2018).

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Chapter 18
Proposing a Diversity Intelligence Training Framework for Leaders and Managers to Attract, Maintain, and Balance Mature Workers

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ABSTRACT

The workforce is becoming more diverse with the increasing number of mature workers delaying retirement and working beyond the legal retirement age. Retaining mature workers in organizations can be challenging. Training leaders and managers in diversity intelligence (DQ) has the potential to lead to better and more effective supervision of diverse employees. Competent and skilled managers and leaders who are trained in DQ will be more able to help in the attracting, retaining, and balancing mature workers. The chapter proposes using the three learning processes of enactive, iconic, and symbolic from Bruner's discovery learning theory to teach leaders and managers DQ. The learning outcome is that managers will become mentors and coaches who are equipped to use goal-oriented and transformative processes to supervise the independent, motivated, and proactive adult workers.

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INTRODUCTION

Researchers indicated that diverse and multicultural intellectual human capital assets within organizations are more effective at producing higher performance (Nelson, 2014, Chen, Liu, & Portnoy 2012, Moon, 2013 & Bogilovic & Skerlavaj, 2016). One diverse characteristic is that of workers over the age of 40 who are considered to be mature workers in many workplaces. These workers are protected from workplace discrimination by the Age Discrimination in Employment Act (ADEA) of 1967 (US Department of Labor, n.d. a). There has been a significant increase in the number of workers who have chosen to remain in the workplace beyond traditional retirement ages in the workplace. Brandon (2018) purported that full retirement age will continue to increase to about 67 years of age for workers born in 1960 and later. Increased life expectancy, financial necessity, and improved health of older Americans are all factors that are contributing to retirement-aged people delaying their retirement (Orszag, 2018). Pew research and the U.S Bureau of Labor Statistic both reported that some employees are uncertain about retirement and expressed delaying retirement until after age 65. Statistics from these two organizations confirmed employment of 65 and older employees has increased significantly over the past 30 years (Pew Charitable Trust, 2018, Toossi & Torpey, 2017).

As workplaces become more diverse, especially with older adults deciding to retire later or to work through retirement, leaders must become more adept at leading diverse employees. Having the knowledge and the understanding on how to lead diverse employees (Hughes, 2016, 2018c) and manage diverse intellectual human capital assets is important in keeping an organization's competitive advantage. According to Wiig (1993), knowledge management is fundamentally the management of corporate knowledge and intellectual assets that can improve a range of organizational performance characteristics and add value by enabling an enterprise to act intelligently. Since the early 1990s knowledge management has been a critical factor for organizations looking to increase their productivity and effectiveness (Delong & Fahey, 2000; Drucker, 1999; Zack, 1999; Inkpen, 1996). According to Koulopoulos and Frappaolo (2000), knowledge management is a critical business strategy, which enables an organization to leverage its most precious resources, collective know-how, talent and experiences to accelerate the rate at which it handles new market challenges and opportunities. Inkpen (1996) propounded that organizations' failure to create and manage knowledge as a critical asset may account for their declining performance.

Using Diversity Intelligence (DQ) to Train Leaders and Managers of Mature Workers

The workplace has become a very diverse environment, and leaders and managers are called upon to direct and supervise employees from various backgrounds and cultures. Yet, many leaders and managers are ill-informed of diversity intelligence (DQ) (Hughes, 2016; Hughes & Brown, 2018) and how to effectively manage and supervise a diverse workforce. DQ covers all protected class groups and categories in the American workplace. Age is a protected classification for all workers aged 40 and over. Although workers who reach the age of 40 are in a protected class, it does not automatically signify that they are mature workers. Mature means different things to different individuals. In the context of this chapter, we are going to define a mature worker as any worker at 40 years of age and older. We are simply acknowledging their age as a stage at which maturity should begin if it is not already present and hopefully continue if it is the beginning. We are also acknowledging that these protected class workers

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are aware of their protective workplace status and may be working within the context of that protection from discrimination based on age.

Leaders and managers who are trained in DQ will be more apt to help in the attracting, retaining, and balancing mature workers. McVey & McVey (2005) stated that competent, skilled leadership is the key to engaging staff at all levels. Leadership must be inclusive as they develop goals and strategies for maintaining and retaining employees. They further stated that staff who have a sense of confidence and trust their careers in the hands of organizations' leaders will be inspired to seek professional growth. Rackleff (2002) stated that knowledgeable correctional officers' recruiters were effective in recruiting new staff because they were well-spoken and were able to explain the job to applicants. The recruiters' enthusiasm, optimism and positive attitude were instrumental in filling the vacancies with the best applicants.

DQ is defined by Hughes (2018a,) as "the capability of individuals to recognize the value of workplace diversity and to use this information to guide thinking and behavior" (p. 260). Kahl and Schmitz (2010) construed that many leaders have surface appreciation but do not have deep knowledge of dialogue that is critical in examining the aspects of diversity. Hughes (2016; 2018c) and Hughes and Brown (2018) also found similar results where leaders do not apply deep knowledge to examine diversity. Chrobot-Mason and Leslie's (2012) empirical evidence indicated that organizational leaders with skillsets in managing multicultural workplaces are more successful in achieving cooperating employees and getting mutually satisfying job performance.

In contrast, Moon (2013) stated that although several researchers have found significant positive link between diverse teams and job performance, several other researches have highlighted conflicts that have hampered successful performance. Organizations with diverse and multicultural teams have had mixed results on job performance (Robert, Dennis, & Ahuja, 2018). Training leaders and managers in DQ has the potential to lead to better and more effective supervision of diverse multicultural employees and older workforce (Hughes, 2018c).

The purpose of this chapter is to explore DQ and adult learning theories in the context of mature workers and propose a framework on how to train DQ to leaders and managers. The ability of leaders and managers to better lead and manage all of their diverse employees, who provide human capital knowledge assets to their organizations, is the ultimate goal of DQ.

BACKGROUND

Theoretical Background

Bruner's (1961) Discovery Learning theory was be used to propose a framework to train DQ to leaders and managers. Discovery learning is a method of inquiry-based instruction and suggests that it is best for learners to discover facts and relationships for themselves. It is a constructivist learning theory that takes place in problem solving situations where the learner draws on his or her own past experience and existing knowledge to discover facts and relationships and new truths to be learned (David, 2017). The three systems of processing knowledge referred to by Bruner (1964), enactive, iconic, and symbolic, will be used as the building block elements for the proposed framework. The three systems are defined as follow:

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1. Enactive representation – "A mode of representing past events through appropriate motor response" (p. 2). This is acquiring knowledge through actions.
2. Iconic representation – "Summarizes events by the selective organization of percepts and of images, by the spatial, temporal, and qualitative structures of the perceptual field and their transformed images" (p. 2). This is internalizing and enhancing knowledge by developing visual images to retain information.
3. Symbolic representation – "A symbolic system represents things by design features that include remoteness and arbitrariness. A word neither points directly to its referent here and now, nor does it resemble it as a picture" (p. 2). This is classifying, coding, organizing and storing the information and knowledge.

Bruner (1961) posited that discovery in learning not only enables learners to acquire information for themselves but also to get information that is necessary for learning a variety of techniques for problem solving. Bruner (1964) wrote that cognitive growth is both from the outside in as well as from the inside out. Learners develop techniques to use the recurrent features in the complex environment to aid in understanding the learning material, which is the enactive representation. The learners also process information through action, imagery, and language utilizing both the iconic and symbolic representations. Bruner (1977) suggested that the objective of learning is to cultivate excellence by helping learners to achieve optimum intellectual development. Four conditions that can aid the learning process suggested by Bruner (1977) are:

1. Structure in learning - that is, exposing learners to the fundamental structure of the course and the subject matter. Understanding the structure of the course and what to expect can increase the motivation and the self-efficacy of the learners.
2. Readiness for learning - which is using a spiral curriculum to repeatedly state and build on foundational information until learners fully grasp the content of the course.
3. Nature of intuition - which is using intuitive thinking to arrive at plausible formulations without the analytical steps. Most adult learners have good intuitive knowledge from their vast life experiences, so this should be harnessed in the learning process.
4. Desire to learn- is to stimulate the interest in subject matter and material rather than external goals such as grades. Most adult learners put more interest in learning the material over getting good grades.

Many adults, today, receive tuition assistance that is dependent upon the grades that they receive, so grades may be as important as subject matter and material knowledge.

Discovery learning theory is a stimulating tool to use to develop DQ in leaders and managers because it is an inquiry-based instruction system. The three processing systems of enactive, iconic, and symbolic are instrumental in providing a foundation for the enhancing and blossoming of their cognitive understanding of issues relating to mature workers. Discovery learning is a constructivist theory that posits relationship building and problem solving in learning structure. Utilizing these elements leaders and managers will be able to hone and upgrade key managements techniques that can advance their skill sets in organizing and coordinating programs for the furtherance of balancing and maintaining a mature workforce.

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Diversity Intelligence (DQ) and Retaining Employees

DQ is how leaders and managers in organizations use the knowledge of the workforce's composition and leverage the organizations' workforce inter-personnel diversity (Hughes, 2018d) to effect positive attitude and behavior change leading to constructive outcomes. Workforce inter-personnnel diversity focuses on the ways that individuals differ in personal characteristics despite having the same position classifications in the workplace (Hughes, 2018d).

DQ can aid leaders and managers in attracting, maintaining and balancing valuable employees, especially mature workers. Fajčíková, Urbancová,& Fejfarová (2018) said to overcome the challenge of declining labor market organizations need to change their recruitment strategy by developing and training their current staff. Siegfried (2008) postulated that organizations are offering targeted leadership training to ensure managers gain relevant information on the organizational dynamics, employees' composition, and broad functional and geographic exposure within organizations leading to the maintenance of key talents. Leadership training programs coupled with manager mentoring, Siegfried (2008) claimed, helped to prepare junior employees for future roles in the organization by keeping staff challenged and emotionally invested in the company's success.

Talent Intelligence

Carey (2007) offered three strategies that can aid in retention of employees. The first strategy is to consider education as a business strategy. The author said the "Grow your Own" philosophy can directly impact an employer's diversity recruitment challenges by hiring diverse talent and providing educational assistance or advanced training for both recruits and managers. Not only is it a cost-effective mechanism, but it also addresses future talent needs. Another strategy is to tap into the talent that exists everywhere and reach out to diverse job seekers by using talent intelligence.

Talent intelligence, according to Carey (2007), is research and information that speaks to an organization's current recruitment needs and supports strategies for workforce planning. Equipping recruiters with knowledge about diverse markets will help build broader and deeper knowledge around what prospective employees, especially mature job seekers, lack in their current jobs so that recruiters can offer the right incentives for them to join the organization. The third strategy is to offer an innovative workplace. The challenge, Carey (2007) stated, is not for managers to adopt new people management ideas, but for them to clear out the outmoded and ineffective old ideas around managing people. Managers learning about diverse workers can institute innovative offers in the organization to retain workers. Holly (2019) suggested by training managers to provide targeted ways to engage key matured talents can build the strength of the workforce and the commitment to the organization at the same time.

Working Conditions and Retention

Levin (2008) concluded in his analysis on how to retain teachers, that skilled and supportive principals, opportunities to learn and improve skills, and strong collegial environments are among the working conditions that matter most to teachers. Leadership development is a particularly important element in the retention of qualified teachers which is also related to improved student outcomes. Everyone benefits when school systems help all staff understand how to build strong collegial organizations that support people while also helping them improve (Levin 2008).

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McVey & McVey (2005) agreed that personnel should be valued, respected, and invested for the future success of the organization. They further stated that internal mechanism for attracting and retaining competent and committed workforce is directly related to the leadership and how they lead, direct, develop, and manage their employees. Bridger & Johnson (2005) proposed that driving continuous improvement ultimately becomes a training exercise to support the identification of alternative practices, procedures, policies, and expected behaviors. A focus on training can begin to alter an organization's culture that can lead to continuous retention, balancing, and maintaining of a talented and diverse workforce.

Propositions

Designing a framework to teach DQ to leaders and managers can allow leaders and managers to become better and more effective supervisors to diverse and adult multicultural workers. The proposed outcomes from educating leaders and managers in DQ are:

Proposition1: Leaders and managers with high DQ will be more effective at managing diverse and adult multicultural workforce.
Proposition 2: Diverse and adult multicultural learners that are led by managers with high DQ will have higher job performance.
Proposition 3: A structured framework based on discovery learning will be instrumental to developing DQ.

Propositions one and two align with Hughes' (2018b) research suggestions.

MAIN FOCUS OF THE CHAPTER

Characteristics of Adult Learners

Chen, Kim, Moon, and Merriam (2008) noted that although most literature portrayed adult learners as a homogenous group, adult learners are a diverse group with variable age, race, ethnicity, education, income, and physical and cognitive impediments. Merriam (2001) reviewed Knowles (1980) five assumptions of adult learners in his andragogy theory. The assumptions describe the adult learners as having independent self-concept, reservoir of life experiences, learning related to social roles, problem-centered with interest in immediate application, and motivated to learn by internal factors. Scanlon's (2009) research highlighted a complex world of adult learners that is segmented, but the segments are not discrete because the boundaries between them are permeable. The learners revealed a multifaceted understanding of their own learning needs and know the ways in which teachers and other students could support or distract them. They were in accord to the kinds of structures required for them to effectively learn and sustain self-concept transformation. Chen et al.'s (2008) review of literature found that older adults, with a few exceptions, are highly motivated and proactively participate in diverse educational activities.

Roberts, Gustavs, and Mack (2012) determined that adults with postgraduate experience are independent and self-directing, have valuable experience, value learning that integrates with everyday life, are problem centered, and are motivated by internal drivers. Patterson (2017) indicated that participating learners had higher self-rated leadership ratings than control learners which positions them for program advocacy roles. Compared with control learners, they were in fact slightly more involved and had slightly

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higher scale scores in reasoning and information processing. Hashim, Tan, and Rashid (2015) found that the adult students were motivated by career development, job security, upward mobility, and re-careering. Their future professional endeavors were usually aided by their life experience, and their reflections and actions were integral components of the adult learning process.

Relationship Between Diversity, Cultural Intelligence (CQ), and Performance

Edwards (2016) postulated that cultural intelligence (CQ) can be valuable tool for education and training. It has been established that a diverse workplace with high cultural diversity exhibits increased work performance (Nelson, 2014, Chen, Liu, & Portnoy 2012, Moon, 2013 & Bogilovic & Skerlavaj, 2016). Several studies have also indicated that mature workers, not only increase the cultural diversity of the work environment, but they are motivated and hard workers who impact the performance and effectiveness of the organizations (Roberts, Gustavs, and Mack, 2012, & Chen et al.'s, 2008). Nelson (2014) purported that diverse teams are more effective and produce better results in financial and innovative endeavors. They further stated that diversity also create a cognitive and social environment which is a positive indicator for increased performance. Moon (2013) investigated the relationship between cultural intelligence and performance in multicultural team. The results indicate that cultural intelligence moderates the relationship between cultural diversity and team performance. The results also demonstrate that multicultural teams with higher levels of cultural intelligence and cultural diversity exhibit higher rates of performance over time. Bogilovic and Skerlavaj (2016) provided empirical evidence to show that creativity is stimulated within culturally diverse environments. They further stated that individuals with high metacognitive and motivational CQ can be creative when collaborating with individuals from different cultural backgrounds. Chen, Liu and Portnoy (2012) also provided empirical evidence to confirm the relationship between individual motivational cultural intelligence and firm diversity climate and increased performance.

Establishing the link between diversity and increased workplace performance and also highlighting that mature workers are delaying retirement; it is critical that managers are knowledgeable in leading and supervising mature workers. Educating managers about DQ can impact the retention of mature workers leading to more effective organizations. Strasser and Seplocha (2005) wrote that educating university professors in multicultural education can bring great value by providing a context for various types of adult learning activities to address the range of learners and move beyond tolerance of differences to ward affirmation and solidarity.

Barriers to Adult Learning

There are some barriers to adults learning and advancing in the workforce. Flynn, Johnson, Brown, and Rodger (2011) grouped barriers into three categories: situational, institutional, and dispositional. Situational barriers relate to a person's life situation such as living situation. Familial support may limit or prevent access to supportive technology with limited places to study. Negative attitudes about education held by family, friends, or one's partner are also associated with lower participation and training completion rates. Having a teacher, guidance counselor, or family member who cared about them and their education would have helped some adult learners to stay and complete their educational endeavors. Institutional barriers include educational programs, teachers, and government policy. There is evidence that a poor curriculum that is irrelevant to adults' everyday lives or is uninteresting discourages some

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adult learners from completing programs. Dispositional or motivational factors include the influence of past experiences; community perceptions; and personal, academic, and job-related motives. A troubled education history, lack of engagement in learning activities at earlier ages, and poor performance in previous schooling can be negatively associated with participation in adult students. Individual characteristics such as gender, education level, and socioeconomic status can also be barriers in adult learning. Fewer programs are available for workplaces with large numbers of women than for male-dominated workplaces, so women may be at a disadvantage compared with men when it comes to attaining basic training. Conversely, men may reject adult education programs as a feminine activity and may be reluctant to participate in programs perceived as female oriented. Men also exhibit higher dropout rates from programs than women (Flynn et al., 2011).

Jacot, Frenay and Cazan's (2010) findings revealed that adult learners end their educational endeavors for extrinsic reasons because they had to cope with many obstacles in different life spheres. Learners' age and elapsed time from their initial training constituted a negative influence on their expectancy of training completion. The adults who completed their educational programs attributed intrinsic motivation for their perseverance using coping strategies in their life contexts.

Elements that Foster Success in Adult Learning

Marmon (2013) explicated that providing small goals, specific feedback, encouraging creativity and using authentic materials that address the adult learners' needs helped to foster good learning habits. The contextualization and personalization of assignments, using real world examples, and explicit strategy instruction enabled instructors to directly connect with learners. Also, creatively embedding technology within instruction empowers adult learners by fostering digital and technological literacy. Bolliger and Shepherd (2018) noted that internet-enabled devices are now widely used in education and even in wilderness areas, but cautioned that although they are valuable to instruction, they might interrupt connectivity to direct experience. The study revealed that some learners desired a boundary between internet-enabled devices and training.

Quinlan and O'Brodovich (1996) found that including learners in planning projects and giving them a meaningful role in identifying ways to assist themselves and other learners in their transitional stages of learning can be instrumental in their gaining the employability and occupational skills necessary for entry to the new workplace. Napan (2002) used choice theory and adult learning theory in tertiary education and posited that interactive learning and self-evaluation are two important tools in adult learning. Quinn, Foote, and Williams (2012) professed that one of the tools for success in teaching adult learners is for Christian instructors to reflect deeply on their own faith assumptions and how those assumptions influence their instruction and development of courses. The instructors should model and facilitate the kind of behavior that is necessary for a transformational learning experience.

Jackson (2009) corroborated the work of Merriam, Caffarella, and Baumgarter (2007) on the social cognitive and constructivist theories in the study on adult learning experience. Using the two models of socially interactive interchange and the superior/subordinate relationship, Jackson (2009) indicated that adult learners will have greater acceptance of training when they are involved in the process. Dae Joong (2007) propagated a theory of rhizoactivty on adult learning. Rhizoactivity involves past choices in decision making. It takes into consideration emotions, intuition, and bodily feeling to help in rational decision making. Adult learners tend to past experiences and intuition to aid them in making decisions in the learning process.

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Conceptualizing Learning Programs for Adults: Education and Training

Education and training are different. Learners, during education, acquire knowledge that is most often used in the future while, during training, they acquire knowledge and skills to perform tasks and activities in their current job. Newland (2008) explained that training "gives us the opportunity to undertake instruction that allows skills to be practiced in order to bring about a desired standard of performance or behavior" (p. 36).

Education

Merriam (2008) declared that learning is not just a cognitive activity but a multidimensional phenomenon. Merriam (2001) specified that learning is not situated in a particular context but can be examined through race, gender, class, power, and oppression. The more that is known about how adults learn the better it is to structure learning activities that resonate with adult learners and enable them to become more empowered and independent. Karmelita (2017) revealed that adult transition education programs should seek to relate the curriculum to real-life experiences, integrate technology, remediate, foster effective relationships, connect students to support each other, and provide a genuine college experience.

Merriam (2001) reiterated that andragogy is a learner-centered educational program and the training should be a program planning model that has an atmosphere that embodies acceptance, respect, and support for the adult student. Herbold (2011) corroborated adult learning theory from the perspective that when students are intimately involved in customizing their educational activities that they are more successful in the course. Merriam (2001) stated that the learning process is very comprehensive and is much more than the systematic acquisition and storage of information, but involves making sense of lives by absorbing, imagining, intuiting, and learning informally with others.

Merriam (2008) further posited that the spotlight on the understanding of adult learning has shifted to a learner in context. A broad context linking individual's learning process to the context of the learner, making for a richer holistic understanding of the learning in adulthood. Chen et al. (2008) postulated that researchers indicate that adult educational programs are influenced by the impetus of the life context of older adulthood and factors such as greater access to disposal time and developmental position.

Merriam (2008) reviewed andragogy and self-directed learning and stated they are about the individual adult learner and are conceptualized for transformational learning, therefore instructional strategies should be employed to foster adult learning. Scanlon (2009) indicated that interaction with significant others was particularly important for adult learners and supportive teachers who provided activities such as, treating students with respect, having pedagogical content knowledge, and engaging in effective communication have positive influence on the leaners.

Merriam (2008) revealed that encouraging reflection and dialogue, whether with the self, another, or a group, enables learning to take place. Critical reflection is essential for transformative learning, for engaging in social movements, for developing brain capacity, and for confronting power and politics in workplace learning. Connecting new learning with learners' previous experience is a longstanding strategy of processing new information. Merriam (2008) also recommended expanding the repertoire of instruction to include creative and artistic modes of inquiry such as folklore, myths, symbols, music, dance, and even dreams as sources of knowledge since adult learning is a multidimensional and holistic phenomenon. Scanlon (2009) signified that students also identified informal mentoring relationships as a principal form of support within the college from distractions that came from students who made

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others feel insecure through overt displays of their own competence, engaged in negative dialogue, or were disruptive in class.

Autonomous learning is a significant component of adult learning. The curriculum structure encouraged student autonomy in setting their own goals. However, student autonomy can be severely restricted by teachers who are not always receptive to students because it is the teachers who determine the learning environment in the classroom. The students will only approach teachers if they felt the teacher was prepared to negotiate.

Training

Cox's (2015) research on coaching adults stated adult training programs need to have a learner's agenda, not the curriculum-based or institutional agenda. Utilizing a learner's agenda, Cox (2015) declared, uses nonjudgmental listening and open questioning that builds on the learner's experience and the needs arising from that experience. Kelly (2006) posited that life experiences affect the ways adults learn and what they bring to the training atmosphere and how they accept the information presented. The adult learners expect more from their educational sessions because they have other roles that counterbalance the significance of their role as learner.

Roberts et al. (2012) applied some important concepts of adult educational theory to explain how they connected to four strategic areas in the development and implementation of the vocational training programs. The strategic areas were the learning needs of trainees, educational methods best that address those needs, assessment methods that best test the acquisition of the desired learning outcomes, and the needs of supervisors and teachers. Roberts et al. (2012) concluded that formal and informal training should involve adult learners in planning their needs in curriculum, controlling their own learning, supporting them in carrying out their learning plans, and involving them in evaluating their own outcomes.

Online Learning

Hashim et al. (2015) corroborated other researchers that for the online learning process to be successful, adult learners should be able to interact with the course materials, discuss, and collaborate between instructor and other students, and integrate their past experience with the course content or assignment. Morris (2019) said to actively engage adult learners in online learning, the program should be able to encourage them to discuss, argue, negotiate ideas, and to collaboratively solve problems. Hashim et al (2015) indicated that adult learner learning context require them to integrate their rich life and employment experiences in learning. The research findings revealed that adult learners' attitude, cognitive, affective, and social needs have a positive influence on their intention to adopt m-learning. Although employment experiences may be desired to be integrated by students, the educators must ensure that students are not integrating their experiences out of context of the course content. Every work experience is not applicable to all course discussions and can be a distraction to the course's learning objectives and purpose and to the other students in the course.

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Adult Learning Models for Education and Training

Roberts et al. Four Models

Several researchers have devised various models for adult learning. Roberts, Gustavs, & Mack (2012) spoke to four types of learning models for adult training program which evolves into a life-long practice of continuing professional development and are centered on self-directed learning where trainees accept responsibility for their own learning. The four models are: discipline-based learning (DBL) which involves self-directed learning and is instructor centered; problem-based learning (PBL) which is thought to be effective and have positive effects on competency after graduation; workplace-based learning (WBL) which is an apprentice type model focuses on developing competencies; and critical reflective learning (CRL) directs learner to evidence-based learning to ensure thinking and learning.

DBL is critical to develop a trainee's insight and ability to reflect on their performance and behavior. It is typically taught in lectures to groups. The problem-based learning model differs from the discipline-based models as it requires trainees to work through a combination of learning strategies to discover the nature of a problem, understand the constraints and options leading to a resolution, and the viewpoints involved. It organizes training around work topics and everyday problems encountered in the work sphere so that the trainees focus on learning relevant to their work. Workplace-based learning includes sociocultural elements where learning is framed as an activity involving increased access to participating roles in expert performance and teaching needs to be planned and can occur in short-term. Critical reflective learning combines critical analysis and reflective learning to train the learners to evaluate information from unexpected problems and to ensure they are from authoritative and reliable sources (Roberts et al., 2012). Nielsen (2015) offered implications for effective training of adult learners by noting that strategies that support student motivation and persistence are effective practices for improving learning outcomes.

Toulutiene (2013) revealed critical elements for successful adult learning programs. Programs that address cognitive, affective-motivational, psychosocial problems encountered by adults in the learning process and offer respect, tolerance, trust, communication, and the pursuit of communicating and consensus provided important assistance to the learner by helping them to avoid learning difficulties. They help the adult learner function, promote the adult independent learning, and also help to overcome the gaps in knowledge, abilities and skills, fear and stress during learning process.

Reinforcing and Adaptive Models

Morris (2019) proposed two learning models for adults. The reinforcing model with modes of instruction and performance without inquiry works best for adult learners who may become accustomed to habitual patterns of perceiving, thinking, judging, feeling, and acting that represent a lack of need to adapt to social contextual changes or a lack of motivation for self-directed learning. The adaptive model with the modes of instruction and performance with inquiry may facilitate learners to be adaptive in their performance by potentially enhancing learners' motivation for self-directed learning.

Four-Lens Model

Kiely, Sandmann, and Truluck (2004) devised the four-lens model which included the learner, process, context, and educator which offers a holistic understanding of learning in adulthood. The learner lens examines the learner participation and motivation patterns, learning styles, role of experience, mind-

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body connections in rich learning environments that involve complex and novel situations. The process lens examines the learning processes such as interactive, reflection, dialogue, and transformational and experiential learning. The educator lens examines the instructor's beliefs and assumptions, philosophical orientations, teaching style, behavioral, liberal, progressive, humanistic, and radical approaches to adult learning. The final lens, the context lens, examines learning communities, interactive and structural power, situated cognition, critical pedagogies, and multiculturalism. Kiely et al. (2004) found the four-lens model of learner particularly helpful as it accounts for most of the influences on the diverse adult learners and can be used in planning instruction or in analyzing and diagnosing problems as they occur. The learners will have highly successful experiences as they pursue and complete their training and integrate dimensions of learning in their personal and professional lives.

Booth and Schwartz's Learning Model

Booth and Schwartz (2012) designed a learning model to establish a suitable physical and psychological climate for adults as learners and educators to involve adult learners in the planning and assessment of their own learning. The model includes mutual respect, collaboration, supportiveness, openness, and fun. It identified four specific strategies for effectively and deliberately navigating boundaries with adult learners. The four strategies are practicing the mindful pause; setting mutual expectations, engaging in empathy with strength, and monitoring the relationship; and are described as follows:

1. **Practicing the mindful pause** which helps the teachers to create clarity around relationships with the adult learners and also helps them be aware of their own needs and ensure that they are not relying on a teacher–learner relationship to address them.
2. **Setting mutual expectations** by using intentional and explicit language with adult learners which is the inclusion of their voice and their choice in the learning process.
3. **Engaging in empathy with strength**, which is maintaining rigor, evaluating critically, and being the holders of the relationship.
4. **Monitoring the relationship** which is the monitoring and reflecting on the relationship to continually ensure that the changes to the relationship over time are based on the student's readiness and that the relationship continues to serve the student's learning and development.

McLaughlin's Model

McLaughlin (2015) combined two models to elucidate the compatibility of transformative learning theory with Christian spiritual renewal. The Glisczinski (2007) model examines transformative learning phases of disorienting experience, critical reflection, rational dialogue and action. Kolb (1984) Experiential Learning Cycles model examines concrete experience, reflective observation, abstract conceptualization and active experimentation. The findings revealed there was positive correlation between transformative learning and spiritual renewal.

Introduction to the DQ Training Model Framework

The review of empirical research indicates that Bruner's (1964) three learning processes of enactive, iconic, and symbolic can be used to train leaders and managers in DQ. Developing and enhancing DQ will lead to more effective managers and a more comfortable and engaging work environment. Leaders

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and managers who are trained in DQ will gain competencies to construct knowledge about the mature workforce members' capabilities and needs. Using prior experiences, they can construct useful knowledge structures for purposeful activities.

When leaders and managers are fully trained and vested in DQ, they have capabilities and skills to develop, maintain, and retain a mature workforce. The findings of the review explicate the several characteristics of adult learners that are needed to be considered in attracting, maintaining, balancing, and retaining them. Adult learners are a diverse group of learners with varying cognitive and physical capacities. They are motivated, independent, self-directed learners with a reservoir of life experiences to draw upon. They exhibit multifaceted understanding of their own learning needs and are aware of what support they need from instructors and others. They proactively participate in educational activities that advance their career development and job security and have positive attitudes towards learning and advancement. If managers captured these elements and use them in their management strategies continuous retention of mature workers is possible. Two conceptual model frameworks are proposed here to elucidate training for DQ and how trained leaders and managers in DQ can supervise and develop mature workers for future retention.

Conceptual Framework for the Training DQ to Leaders and Managers

Leaders and managers can increase and enhance their knowledge of diversity in the workplace, and especially as it relates to mature workers, by using Bruner's (1964) discovery learning three systems of processing: enactive, iconic, and symbolic. Through inquiry-based methods leaders and managers can discover facts about mature workers and themselves to build relationships leading to rapport that can help to solve problems. Using the constructivist approach the leaders and managers can draw on their own past experiences and existing knowledge to discover facts and new truths to recognize the value of workplace diversity and to use this information to guide thinking and behavior (Hughes, 2016) that can lead to attraction and retention of mature workers.

Figure 1 illustrates how the three learning processes can be used. The enactive process directs leaders and managers to participate fully in learning about the mature workers and their environment. They should partake in active discovery by posing questions to the workers. This will trigger the curiosity of both parties and will boost engagement and cultivate a collaborative work climate. The second step is the iconic process where the leaders and managers develop images of the captured information and summarized them using visualization. Constructing images of the knowledge helps to internalize the information that will lead to capabilities in mastery and manipulation of knowledge. When leaders and managers develop mastery skills, they are better able lead a mature workforce. The symbolic process is where the managers learn to use words, codes, and symbols to classify, organize, and store captured knowledge. When leaders and managers learn to organize knowledge, they can easily retrieve it to use in building organizational capabilities that can lead to attracting, maintaining, balancing, and retaining mature workers.

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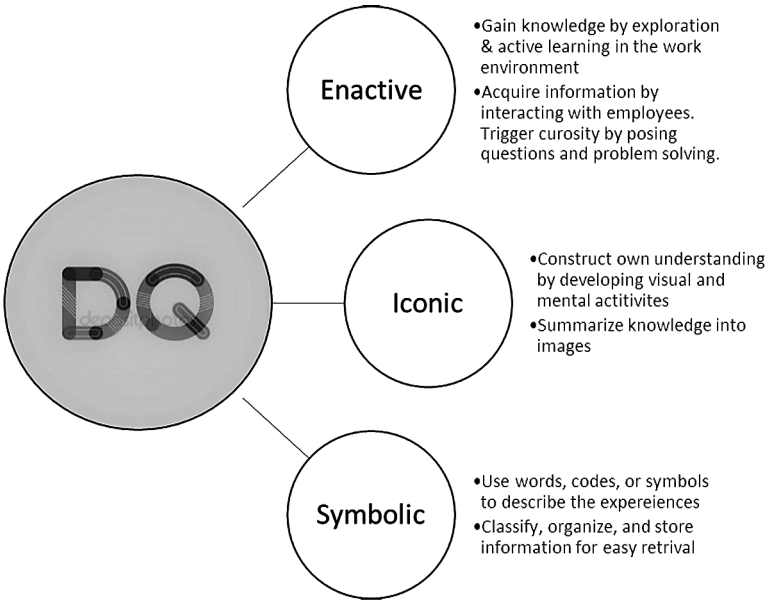
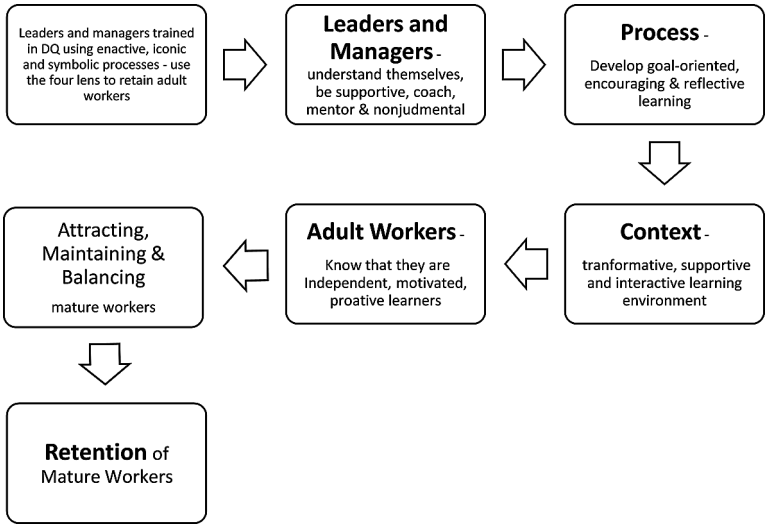
Figure 1. Framework to learn diversity intelligence



Four Lens Model Using DQ for Effective Development and Retention of Mature Workers

After leaders and managers are trained in DQ, they will be better able to supervise and develop mature learners. Figure 2 framework highlights how DQ leaders and managers can supervise and develop mature workers leading to their retention. The Kiely et al (2004) four lens model was used to devise the framework which incorporated the salient findings from the review of the literature on adult learning.

Figure 2. Framework on supervising and developing a mature workforce



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The literature review findings revealed the elements that must be included in supervision programs for them to be beneficial to the adult worker. Several elements must be included for successful and effective maintenance of adult learners. Some of the elements that were indicated to be included in management training programs are real life experiences of adult workers and interactive sessions with remediation. Leaders and managers should foster collaborative relationships between themselves and their workforce which embody acceptance, respect, and support. Leaders and managers must involve the mature workers in management processes by providing direct goals, specific feedback, and encouraging reflection and dialogue. Other elements that are essential, for maintaining the mature worker, include creative and artistic modes of inquiry; mentorship and coaching relationship; and autonomous learning and negotiation. The findings are combined and presented in Table 1.

Table 1. Four lens model using DQ for effective development and retention of mature workers

Lens	Information That Leaders and Managers Need to Know to Develop and Retain Mature Workers	Diversity Intelligence (DQ) (Hughes, 2016)
Adult Workers	• Past experiences must be incorporated into the learning and supervision process • Are self-directed and do self-evaluation • Use past choices in decision making • Are independent, motivated, proactive with positive attitude • They are aware of needs • Need autonomous learning • Know what support is needed • Use emotion and intuition in rational decision making	• Knowledge of the federal government protected class laws • Intellectual capital • Broadened employees' thoughts and actions • Protected class group integration • Diversity knowledge applied to improve organization goals and efforts
Process	• The process should be more self-directed with minimal instructor-led • direct goals, specific feedback, • Include Discipline-based learning (DBL) involves critical reflective learning • Remediation should be provided to enhance basic knowledge • Include Problem-based learning (PBL) and workplace-based learning (WBL) which focus on developing competencies. • Support the learners needs • Use the Reinforcing model help adult learners with habitual patterns of perceiving, thinking, judging, feeling,	• Training and Education of DQ through in-house and external training systems and programs using proposed frameworks.
Leaders and Managers	• Should do regular self-reflection • Set mutual expectations by using intentional and explicit language • Be nonjudgmental in listening • Use Open questioning • Offer Interactive sessions • Engage in empathy with strength while maintaining rigor, evaluating critically, and being the holders of the relationship. • Use Coaching • Use Mentorship • Practice Mindful Pause • Monitor the relationship.	• Cognitive and behavioral perspectives • Willingness to change incorrect thoughts and actions • Diversity knowledge applied to improve organization goals and efforts • Dedicated time and effort to become diversity intelligent to lead all employees
Context	The environment should have a climate of: • Supportiveness, openness, respect and fun • Infuse collaborative model for transformative learning • Curriculum with real experiences • Adaptive model to potentially enhance learners' motivation for self-directed learning • Rational dialogue, creative and artistic modes of inquiry • Programs that address cognitive, affective-motivational, psychosocial problems • Offer tolerance, trust, communication and consensus	The workplace that is governed by federal laws.

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FUTURE RESEARCH DIRECTIONS

These proposed frameworks are but two examples of the potential ways to training leaders and managers in the use of DQ. The frameworks proposed in this chapter can be used to train and educate leaders and managers about DQ. Extensive evaluation of these frameworks are needed to ensure that the methods are applicable to today's adult learners as they seek to include their experiences in the workplace. Online training and learning are very prevalent today and can be tested to see how DQ can be effectively communicated to mature workers via technology.

CONCLUSION

An assessment of adult learning theories, training, and education can be used to integrate DQ into the proposed frameworks to enhance the performance of leaders and managers of mature workers in the workplace. As their performance improves, they are more apt to remain working within the organizations. Mature workers want to know that their work efforts are appreciated and valued. They often want to share their experiences for the betterment of their organization and their peers. Training leaders and managers in DQ will help them to help mature workers better interact with all employees and strengthen the organization.

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KEY TERMS AND DEFINITIONS

Cultural Intelligence: The capability to relate and work effectively across cultures.

Discovery Learning: A method of inquiry-based instruction that allows learners to discover facts and relationships for themselves.

Diversity Intelligence: The capability of individuals to recognize the value of workplace diversity and to use this information to guide thinking and behavior.

Enactive: Acquiring knowledge through actions.

Iconic: Internalizing and enhancing knowledge by developing visual images to retain information.

Multicultural: Relating to several cultural or ethnic groups within a society.

Symbolic: Classifying, coding, organizing and storing the information and knowledge.

Talent Management: Organization's commitment to recruit, hire, retain, and develop the most capable and superior employees.

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Chapter 19
Employee Wellbeing English Language Proficiency a Key to Knowledge Sharing and Social Interaction

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ABSTRACT

This chapter discusses the significance of employee wellbeing at the workplace and self-perceived English language proficiency as a predictor variable. The importance of employee wellbeing has been recognized all around the world. To generalize the findings of previous literature this study has examined the proposed model in the context of telecom MNCs in Pakistan. This chapter starts with what is wellbeing at the workplace? And moves towards it significance in the context of developed and underdeveloped countries. Further, this chapter explains the empirical findings of the proposed model. The results revealed a strong correlation between self-perceived English language proficiency and dimensions of employee wellbeing at the workplace. This is a very important chapter for both researchers and managers.

INTRODUCTION

The key objective in this chapter is highlighting the challenges of employee wellbeing at workplace in telecom MNCs in Pakistan. In the same time will also explore how human capital able affect MNCs to be successful in international business with the international market's environment, there is full of uncertainty impact that may affect the telecom sector's international performance, with comparing with example from other country. The last part of this chapter will be able to have clear idea how to handle human capital and outcome all challenges. The chapter enable manager and student to discover more

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about Pakistani culture, value and firm behaviour. Over the last few decades, many changes have been taken place in the working environment. However, the most fundamental development is the increased psychological work load. The growing international competition and globalization that organizations are facing now days have compelled them to increase their interest in core elements of the organizational success such as human resource. That is why employees are the most valuable assets for their organizations. Employees who are not satisfied from their work or lives tend to decrease their job performance, job commitment, and devotion to their work and family. Numbers of studies have connected employees' well-being with: decline in turnover; high performance and improved physical health. Low level of employees' well-being adversely affects worker and their organizations; a clear identification of workers well-being predictors is needed in order to frame an effective theoretical framework for understanding employees' well-being at workplace. Constantly growing competition in the telecommunication industry in Pakistan has compelled the companies to focus on every aspect that contributes in the success of the company. For instance, human capital plays important role for the organizations. Therefore, it is important for the telecom MNCs operating in Pakistan to be aware of the psychological demands of their human capital. This chapter tries to extend the knowledge on employee wellbeing and English language proficiency by including empirical studies from telecom sector of Pakistan.

BACKGROUND: EMPLOYEE WELLBEING AT WORKPLACE

Employees' well-being is also an important constituent for an employee to make decision for his future in the organization. Thus, there is extensive amount of evidence to point out the correlation between employees' well-being and performance. Meanwhile, importance of employees' well-being is also noticed by the policy makers in Pakistan. They have highlighted the importance of employees' well-being by ensuring the welfare of the worker, job security and good working conditions as key element in the Fifth Labor Policy, 2010. It is argued that environments should be created in a way, in which employees and employers are dedicated in enhancing the labor productivity (Fifth Labor Policy, 2010).

Definition

The term employee well-being refers to *"the mental and physical health of the workers"* (Currie, 2001; Eatough, 2013). Which means that employee should be working in such environment where he feels safe both physically and mentally. Mental health refers to the presence of wellness rather than the absence of illness. Well-being is a broader topic that covers so many organizational and workplace factors. Page and Vella-Brodrick (2009) operationalizes employee wellbeing and covers all the aspects of employee's wellbeing including psychological wellbeing, subjective wellbeing and wellbeing at workplace. Figure below explains the idea of Page and Vella-Brodrick. As shown in Figure 1.

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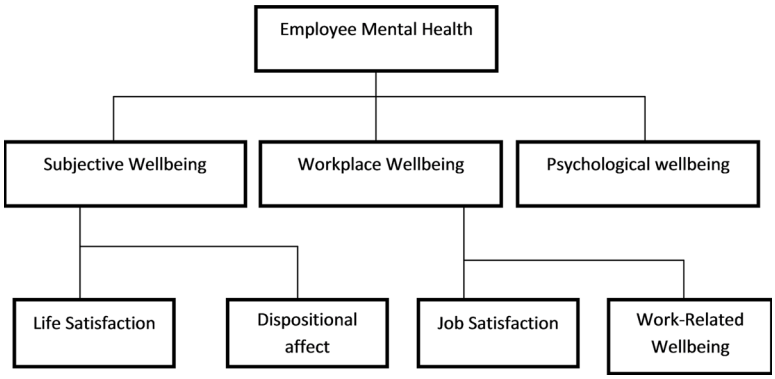
Figure 1. Model of Employee Mental Health



SIGNIFICANCE OF EMPLOYEE WELLBEING AT WORKPLACE

This chapter on employee wellbeing at workplace will promote:

- The health and safety of work, working methods and the work environment.
- Employees' physical, psychological and social well-being.
- The meaningfulness of work.
- Healthy and safe ways of organizing work.
- Risk assessment and management.
- The control of exposure, strain and stress.
- The development of occupational health care and rehabilitation.
- The balance between work and leisure.
- The role of occupational health and safety at work as a productive factor, and its role in business.
- Information and influencing attitudes.
- The impact of work as a health-promoting factor.
- The dissemination of good practices.

GLOBAL OVERVIEW OF EMPLOYEE WELLBEING AT WORKPLACE

The topic of employee wellbeing at workplace has been under discussion since many decades. Number of authors and managers have emphasized on employees' wellbeing and related it to the world's economy. It is represented by the topic and the study included in this chapter is based on the employees working in developing country like Pakistan. It is needed over here to discuss the global perspective of employees' wellbeing at workplace. As discussed earlier, human capital is the backbone of business organizations and wellness of employees is favorable for both business and the employees themselves. Starting from the developed countries, HR departments have mainly focused on the development of healthy labor including front line employees to top management. Not only the companies themselves, Government have also put emphasize on the companies to recruit and maintain the healthy staff. For example, The Ministry of Social Affairs and Health (Finland) has started a Forum for well-being at work in order to

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expand co-operation in the promotion of wellbeing at workplace. The Forum provides a natural and reliable foundation for extensive co-operation by all actors. Social partners, insurance and research organizations, and ministries are all represented in the steering group of the forum. It provides a platform to which these and other organizations can bring their ideas and proposals and promote new initiatives.

MAIN FOCUS OF THE CHAPTER

Employee Wellbeing at Workplace in the Context of Pakistan

Employees' well-being is also an important constituent for an employee to make decision for his future in the organization. Thus, there is extensive amount of evidence to point out the correlation between employees' well-being and performance (Bryson & Stokes, 2014). Meanwhile, importance of employees' well-being is also noticed by the policy makers in Pakistan. They have highlighted the importance of employees' well-being by ensuring the welfare of the worker, job security and good working conditions as key element in the Fifth Labor Policy, 2010. It is argued that environments should be created in a way, in which employees and employers are dedicated in enhancing the labor productivity (Fifth Labor Policy, 2010) . But even after five years, desired goals set by the fifth labor policy and favorable conditions for the workers are not achieved. Decrease in the well-being of the employees directly and indirectly effect the performance of the organization. Evidences shows that due to less productivity and profitability, multi-national telecommunication companies are pulling out their business from Pakistan. It is needed to maintain the well-being of the existing employees through well-organized strategies to overcome such organizational hazards. Therefore, this study provides the predictors of workers well-being that helps in making well planned strategies to overcome the situation if the employees' well-being is low.

Dimensions of Employee Wellbeing at Workplace

Employee wellbeing at workplace is a broader topic; many scientists have worked on this particular construct using different dimensions based on the context and theories. There are no empirically proved common dimensions of employee wellbeing at workplace. For example studies from 1998-2016 authors have conceptualized the construct wellbeing with different dimensions whereas job satisfaction is considered as most common dimension of employee wellbeing at workplace. As shown in Table 1.

Warr (1990) has conceptualized employee wellbeing at three axis as shown in the figure 2 below. This chapter has utilized Warr's (1990) model as a basic foundation in understanding employees' well-being at work. This model operationalizes employees' well-being at work as it comprises of three main axis pleasure - displeasure, depression – enthusiasm and anxiety – comfort. Warr's model provides a comprehensive over view of employees' well-being at workplace, including job satisfaction as a key element of employees' well-being at work (Sparr & Sonnentag, 2008). His model includes cognitive and affective judgments of the individuals that show the overall employees' well-being at work appropriately to the aims of this study investigation.

Four dimensions have been extracted based on the model and prior studies. Job satisfaction from pleased-dis pleased, job depression from enthusiastic-depressed, job anxiety from anxious-contented and turnover intention is selected as it is behavioral outcome of negative effects at the workplace.

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Table 1. Dimensions of Employees' Well-Being at Work (1998-2016)

Author	Country	Employees' well-being at Work Indicators	Participants
De Jonge and Schaufeli (1998)	Netherland	• Job satisfaction • Job related anxiety • Occupational burnout	1437 Dutch health workers
Richter et al. (2013)	Sweden	• Subjective job Satisfaction • Mental health	553 Swedish accounting firm employees
Duygulu, Ciraklar, Guripek, and Bagiran (2013)	Turkey	• Work related happiness • Professional self –acceptance • Occupational growth	180 sales representatives
Sparr and Sonnentag (2008)	Germany	• Job satisfaction • Turnover intention • Job anxiety • Job Depression	260 R&D and Public administer employees
Meier, Semmer, and Gross (2014)	Switzerland	• job satisfaction • Somatic complaints • Job-related depressive mood.	127 employees with different jobs
Zacher, Jimmieson, and Bordia (2014)	Australia	• Emotional exhaustion • Job Satisfaction	771 white and blue collar employees
Noor (2004)	United Kingdom	• Job satisfaction • Distress	Not stated.
Mattern and Bauer (2014)	Germany	• Emotional exhaustion • Job Satisfaction	664 German secondary mathematics teachers
Narainsamy and Van Der Westhuizen (2013)	South Africa	• Occupational stress • Job Satisfaction • Work Engagement • Burnout	202 Medical Laboratory Staff
Horn, Taris, Schaufeli, and Schreurs (2004)	Netherland	• Social well-being • Affective Well-being • Professional Well-being	1200 Dutch teachers
Anaby, Jarus, Backman, and Zumbo (2010)	Israel	Life Satisfaction	288 Working Adults
Ibrahim (2012)	Malaysia	• Job satisfaction • Job affective well-being • Life satisfaction • Positive affect • Negative affect • Psychological well-being	1125 assembly workers, supervisors and managers from the manufacturing sector in Malaysia
Singh and Kaur (2005)	Malaysia	• Job Satisfaction • Physical well-being • Psychological well-being	197 respondents from manufacturing Industries
Eatough (2013)	America	• State self-esteem • Discrete emotions. • Fatigue • Job satisfaction • Sleep quality • Trait self-esteem	90 participants filled questionnaire for two weeks (daily dairy studies)
Elovainio et al. (2015)	Finland	• Psychological distress • Perceived Stress	1545 finish employees working in elderly care centers.
Hansen (2016)	New Zealand	Psychological wellbeing	181 managers working in various companies

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Job Satisfaction

Job satisfaction of the individual has both intrinsic and extrinsic aspects. The intrinsic components are work with colleagues, task accomplishment, educational opportunities, social support and personal need of recognition. The extrinsic aspects include promotion and salary given by the organization.

Spector (1997) has given the most comprehensive definition of the job satisfaction. He describes that job satisfaction is comprise of nine aspects: promotion, benefits provided, operating procedures and policies, pay, supervision, contingent rewards as a means of recognition and appreciation, dealing with coworkers, nature of the work, communication within the organization and nature of the work (Spector, 1997). As per those nine aspects, job satisfaction is considered strongly associated with individual and organizational outcomes.

Job satisfaction has influence on individual's life satisfaction. The researchers have examined three possible relationships between job satisfaction and life satisfaction: (1) spillover, where work life influence individuals non work life or vice versa; (2) Compensation, where dissatisfying job is compensated by looking for happiness in his or her non work life and vice versa; (3) segmentation, where job and life involvements are separated and have no concern with each other (Saari & Judge, 2004).

Klassen and Chiu (2010) have conducted a study on educators in which they have mentioned low level of self-efficacy produces high level of job stress and decreases the job satisfaction. Another study examining constant predictors of job stress, job satisfaction, and employee retention between New Zealand Customs Services workers also supported these factors and gathered that satisfied employees enjoy decision-making latitude or autonomy (Mansell, Brough, & Cole, 2006). There are number of factors of job satisfaction have been recognized in previous studies. They are job security, organizational reward systems, centralization, and power distribution, the need for achievement, job resources and self-esteem. Various studies have observed job satisfaction along with other variables, therefore job satisfaction is normally considered as critical outcomes construct. Job satisfaction has a negative relation with absenteeism, and has a positive relation with productivity. For that reason, it is very effective to know which job provisions and characteristics raise job satisfaction.

Studies showed that job satisfaction produces high consumer satisfaction and decreases hiring and training costs. Fleet Boston Financial Corp. assessed in 1999 that only 1% increase in employee commitment could produce $11 million a year and reduce over expense for hiring and training up to $15 million to $19 million a year (Costanzo, 2003). In past few decades, researchers have found various variables that contribute to job satisfaction. Glisson and Durick (1988) roughly organized thee variables in to three groups: (1) variables that explain characteristics of the organizations; (2) variable that explain characteristics of the task; (3) variables that explain characteristics of the worker.

In determining the job satisfaction and evaluating the level of satisfaction of the individuals, three different approaches are proposed. First approach explains the job characteristic and known as "Information Processing Model" (Hackman & Oldham, 1976). As per this model, individual gather the information related to their work place and task and by these elements, they perceive their job satisfaction (Jex, 2002).Second approach explains that job satisfaction depend on the mood or characteristics of the individuals. These moods and characteristics of the individuals are generally associated with genetic heritage or experience or on both. Third approach explains that the evaluation of job satisfaction based on "Social Information"- how other thinks about the workplace. This approach is called "social information processing model".

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Job satisfaction has been distinguished as an important predictor of critical work outcome thereby researcher's interest in this variable is higher than any other. Highly motivated, loyal and satisfied workforce is the element of success for the organizations to compete in the corporate world. Job satisfaction is a key component in maintaining high performance and efficiency of the work which directly influences the productivity of the organization. In order to increase the job satisfaction of the individuals, they should be trusted and provided with autonomy to their concerned departments. Leaders from successful organizations understand that to create positive work environment employee's job satisfaction have a great importance.

EMPLOYEES' TURN OVER INTENTIONS

Job satisfaction have significant role in turnover of the employee and is main factor in most of the turnover models (Farooq & Farooq, 2014; Naumann, 1993). Turnover of the employee is among great interesting topics for organizations, professional and researchers in the discipline of economics, management and organization behaviors (Chan & Mai, 2015; Koh & Goh, 1995). Tett and Meyer (1993) have defined turnover intention as the deliberate readiness to leave an organization. Most of the studies showed, that turnover intention is developed as dissatisfaction of; (1) individual from organization; (2) organization from individual. Turnover intention develops when an employee interested to leave his current job, based on his own desire (Khatri, Budhwar, & Fern, 1999). No matter the size of organization, turnover intention is the main concern for every organization. However part time working industries such as hotels and fast food does not have issue with turnover intention (Cascio, 2006).

Turnover intention is considered as an element of determining actual turnover. Turnover theory develops from attitude – behavior theory by supposing intention to carry out certain behavior defines that behavior. Intentions to leave the organization show the level of dissatisfaction from the current job. Generally, people believe that if someone gets dissatisfied from his job he or she starts finding alternatives, compare the other options with their job and then use the decision power to quit or not to quit (Chan & Mai, 2015).

There is a strong relationship between turnover intention and turnover (Udo, Guimãrães, & Igbaria, 1997). Researchers recommended studying turnover intention instead of actual turnover as it is difficult to calculate the actual turnover (McBey & Karakowsky, 2001). It is likely to ask individuals regarding to their intention to leave than to find and ask individuals on their actual turnover by longitudinal study. Turnover intensions have relationship between commitment, job dissatisfaction and work- life conflict. The significance of studying intentional turnover is based on several organizational consequences that are financial, reputational, loss of customer and scheduling difficulties (Lee, et al., 2004; Mishra & Morrissey, 1990). High rates of turnover intentions provide alarming situation to organizations so they can discourage intentions to leave organization by providing training and compensation to the employees (Wong, et al., 2001). There is no specific reason or goal for the turnover and turnover intention (Percy & Kostere, 2006).

Those employees who want to leave can be costly to the organization. Halpern (2005) in his study found that individuals whom intention is to leave the organization reduce their efficiency prior to quitting. The cost incurred due to turnover can be high containing cost of temporary help or overtime to complete certain project, loss of productivity, sign-on bonuses, time spent in orientation, lost business and hiring costs. Hom, Caranikas-Walker, Prussia, and Griffeth (1992) distributed the cost incurred

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due to turnover in to three categories: cost of separation, cost of replacement and cost of training. Cost of separation includes paper work and leaving interview; cost of replacement comprises of filling the vacancy by new candidate; cost of training includes training of newly hired candidate.

Turnover is a problem for the organizations but not all turnovers are problem for the organizations. If low performers leave the organization, it is in the beneficial of the organization. As the main concern is to retain the high performing workers. Previous studies recommend that one way to retain and reduce intentional turnover is to offer individual for work life balanced practices. Offering reduced hours, flexible scheduling and onsite daycare are important in reducing turnover.

To be successful in today's era of high competition, the retention of skilled and competent employees are significant for the organizations (Shah et al., 2011). Keeping the high quality skilled employees are more important today than ever before (Holtom, et al., 2008). Without valuable workers, a business cannot be successful and prosper. Every individual has its own importance and share in achievement of the goals, elimination of one individual makes difficult to achieve the desired results. Retaining the workers is the key target for the organization because sometimes high salaries and designations cannot successfully retain the employees that is, what happening in the telecom industry of Pakistan (Shoaib, et al., 2009).

JOB DEPRESSION

In clinical settings depression is defined as a period of intense, often continuous feeling of hopelessness and sadness followed by somatic and cognitive symptoms that usually require treatment (Wells & Sturm, 1995). There are various clinical and non-clinical symptoms of depression. Usually depression affects the way one eats and sleeps, the way a person perceive about things and the way a person thinks about himself (Shani & Pizam, 2009). According to Nolen-Hoeksema and Girgus (1994) most common symptoms of depression are lessen interest in daily activities, depressive moods, feelings of worthlessness, significant increase or decrease in weight, fatigue, sleep problems, and loss of energy, indecisiveness, less focus, and suicidal thoughts and in extreme case suicidal attempts.

Job related depression is defined as intense feelings and depressive moods originated from work environment. Work related depression produces serious economic consequences for the organization. US faces $23 billion loss due to depressed work force. The direct costs of depression comprises of primary care, hospitalization, pharmaceuticals, outpatient care and rehabilitation. Still, the major financial loss due to depression stems from indirect costs, which include loss of productivity and absenteeism.

Sometimes outcomes of work related depressions are not directly observed. With the increase in competition around the world organizations are focusing on creative and innovative workforce. Dunnagan, Peterson, and Haynes (2001) argued that this creativity and innovativeness "can be stymied if the individual's mind is clouded with maladaptive stress, anger, and depression." The work environment itself is the common element in developing depression among employees. Zagorski (2007) associated several work environment aspects such as low level of social support within the workplace, increased psychological demands, high job strain and low employment security with the development of job related depression. One of the prominent cause of workplace depression is job related stress which develops from negative work climate, culture or both.

Most of the studies on depression have been conducted on clinical settings. Moreover it has also been studies in organizational settings but they are very few in numbers. For example Kahill (1988) and Maslach, Schaufeli, and Leiter (2001) in their studies have examined antecedents of workplace

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depression, they found burnout, a state of physical, mental and emotional exhaustion and resulting from interpersonal and chronic emotional stressors on the job as the main predictors of job related depression. Warr (1990) and (Sparr & Sonnentag, 2008) in their studies have conceptualized job depression using depressed, gloomy and miserable situations at workplace and related it with the individual's wellbeing at workplace. Thus job depression is the key component of individual's wellbeing.

Shani and Pizam (2009) conducted a study on 151 hotel employees. The results of the study show that job burnout, work related stress are positively related to job depression whereas job satisfaction is negatively related to job depression. Similarly Wang et al. (2012) has also examined job depression by commencing study on 1436 employees, he found that effort reward imbalance, job strain and work family conflict are strongly associated with job related depression. In another study by Cho et al. (2008) shows that organizational injustice, job demands, inadequate social support and job control are the significant predictor of job depression. In line with Warr (1990) this study further examines job depression as a dimension of wellbeing at workplace.

JOB ANXIETY

Anxiety is part of everyday life. It is the provocation of inferiority feelings. Job Anxiety refers to a psychological state that arises when a person feels threat towards his job (Mishra & Yadav, 2013). Negative and positive responses are followed by the anxiety on the job. It can leads to the productive and motivated behavior of the employee. However, anxiety may also result in to harmful effects such as physical, psychological and emotional problems like heart diseases, infection, and depression(Jones, et al., 2011). Mishra and Yadav (2013) argued that job anxiety is an anxiety towards one's job, anxiety which is described as an extremely threatening sensation of danger. It is such a common trend in the world that almost everybody has experienced it at times, at least to a mild degree.

The workplace is an important part of individuals' lives and thus exerts a strong influence on general wellbeing and health. Muschalla, Heldmann, and Fay (2013) observed the significance of job-anxiety in workplace settings and found it related to the sickness and the absence from the workplace. Furthermore they collected response from 249 employees working in different organizations and distinguished between job anxiety and trait- anxiety. Also Muschalla and collegues (2013) suggested to researchers and practitioners to identify the difference among both forms of anxieties. Thus, work can be a source of potentially anxiety-provoking stimuli and because of its complexity different dimensions of anxiety can be provoked at work.

Most of the studies on job anxiety have been investigated in clinical studies. Whereas Warr (1990) has conceptualized job anxiety as dimension of wellbeing at workplace. Data from 1686 employees revealed that job anxiety is negatively related to occupational levels and positively related to work load and job uncertainty. There are various organizational factors that are influencing job anxiety in the workplace. For example Sowmya and Panchanatham (2014) examined job anxiety by conducting study on 100 public bank employees in Chennai. Results of the study showed that organizational politics is the predictor of job anxiety. De Jonge and Schaufeli (1998) studied Warr vitamin model using three dimensions of employee wellbeing at workplace (job satisfaction, job anxiety and emotional exhaustion) and job characteristics (Job demands, job autonomy and workplace social support). It was found in the study that job anxiety is negatively related to job characteristics.

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To the best of present study authors' knowledge whether and to what degree job-anxiety occurs in a non-clinical working population, and whether job-anxiety is influenced by the organizational factors. Similar to Sparr and Sonnentag (2008), the present study examines job anxiety with the organizational factors as one of the dimension of employee wellbeing at workplace.

PREDICTORS OF EMPLOYEE WELLBEING AT WORKPLACE

Various studies have examined various predictors of employee wellbeing at workplace. These predictors are both from positive stand points and negative stand points. For example Ibrahim (2012) has conducted a study on Malaysian manufacturing company employees and considered organizational justice as a predictor of employee wellbeing at workplace. Results from the study showed that if there is high justice in the organization employee's wellbeing at workplace will be also high. Similarly other scientist has chosen trust, organizational support, workplace deviance, workplace flexibility, leadership styles and etc. as strong predictors of employee wellbeing at workplace. In this chapter the main focus of the study is on employees' wellbeing in telecom MNCs in Pakistan. MNCs are facing global challenges due to various challenges and on the top of those challenges is demographic issue. Pakistan is a country where different cultures are combined together. MNCs who are interested to do their business in Pakistan face many demographic challenges. Language is one of the most common issues that are faced by MNCs. Now a days 4 telecom MNCs are operating in Pakistan. These companies have been working since 10 years and even after high competition in the market these companies reaches the revenue of more than 500 billion. It is because of managing all the issues faced by these MNCs. This chapter discusses the role of English language proficiency on employee wellbeing at workplace.

SELF-PERCEIVED ENGLISH LANGUAGE PROFICIENCY

Globalization and increased level of a firm's involvement in exchanging goods and commodities, information, finance, and personnel across national borders (Rugman & Verbeke, 2004), creates challenges for its employees. One such challenge is an increased use of a foreign language at work (Marschan-Piekkari, Welch, & Welch, 1999). Adopting a foreign language in an environment where this language is not the native language of the majority of the local people and where the local language is the predominant. In such an environment, the levels of foreign-language proficiency by employees tend to vary increasingly, which becomes an obstacle for interpersonal communication and may affect an individuals' task performance (Fredriksson, Barner-Rasmussen, & Piekkari, 2006; Harzing & Pudelko, 2013).

Language is considered as the most common aspect to categorize the group of people than any other acquired characteristic in the people and hence considered as a powerful sign for identity of individual (Linguists Giles & Johnson, 1981). Keeping in the view of Linguists and Johnson (1981), a French author said *"In the universal process of cultural homogenization, the role of language will remain intact as a key cultural differentiator, while other sources of cultural differentiation will progressively disappear."* (Usunier, 1998). According to Anxiety and Uncertainty Management theory (1995), interpersonal interaction is positively associated with the language capability and increases the propensity to over-estimate the significance of group members on the behaviors (Gudykunst, 1995). Gudykunst (1995) also argued that uncertainty in the relationship leads to negative consequences in the relationship between people.

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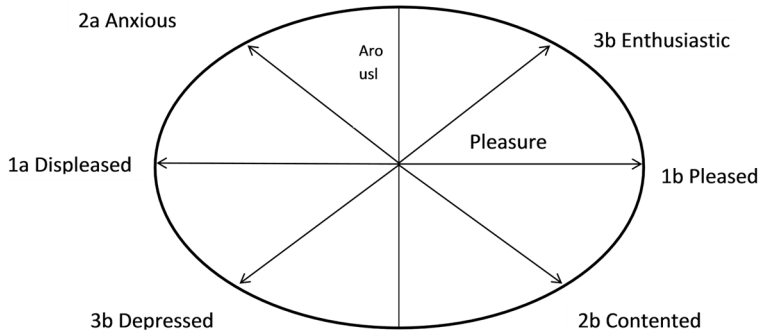
English is the de facto global language (Crystal, 2003) and it is often recognized as the global business language for firms involved in international business (Crystal, 2003; Harzing & Pudelko, 2013). There is significant pressure and motivation for employees who speak English as a foreign language to improve their English language proficiency. Indeed, a number of studies (e.g., Harzing et al., 2011; Neeley et al., 2012) have reported negative emotional responses by non-native English speakers toward their English native colleagues' sense of superiority and their complacency for learning foreign languages. Harzing and Pudelko (2013) developed a model proposing the competency of English language in multinational subsidiaries around the world. In his model he has distributed the regions on the basis of language speaking in the subsidiaries as shown in the figure below. Asian countries have less English speaking labor and are characterized in to low English speaking zone. Multinational organizations in this region usually operate in the local language (Harzing & Pudelko, 2013). See the Figure 3 below.

Figure 2. Warr's Vitamins Model



Among the educated individuals in Pakistan, only one out of 10 can read write and speak English proficiently remain 90% cannot even speak or write 2 sentences of correct English (Dar, 2013). In such environment where individuals are not proficient in English tends to misunderstand the information provided to them in English. Present study explores the effect of English language in the employees working in telecommunication industry in Pakistan.

Based on self-efficacy theory, the self-perceived English-language proficiency of employees who speak English as a foreign language influence their commitment to their organization. Self-efficacy is essentially about a person's confidence in their ability to achieve a goal in a given circumstance (Bandura, 1977, 1982). Self-efficacy is known as a buffer for adverse conditions at work and it is an important predictor of the attitudes of employees to their jobs (e.g., (Saks, 1995) including turnover intention and job satisfaction (Tojjari, et al., 2013; Troutman, et al., 2011).

Applied linguistics research on foreign language acquisition suggests that self-perceived foreign-language proficiency influences a person's confidence in coping with an environment in which the foreign language is used. For instance, recent empirical studies has suggested that the higher a person's self-perceived foreign-language proficiency, the less anxious he or she becomes when communicating in this language (Dewaele, et al., 2008). Therefore, employees who are proficient in speaking English as a foreign language may be more committed to their organizations.

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Figure 3. English language skill based on demography

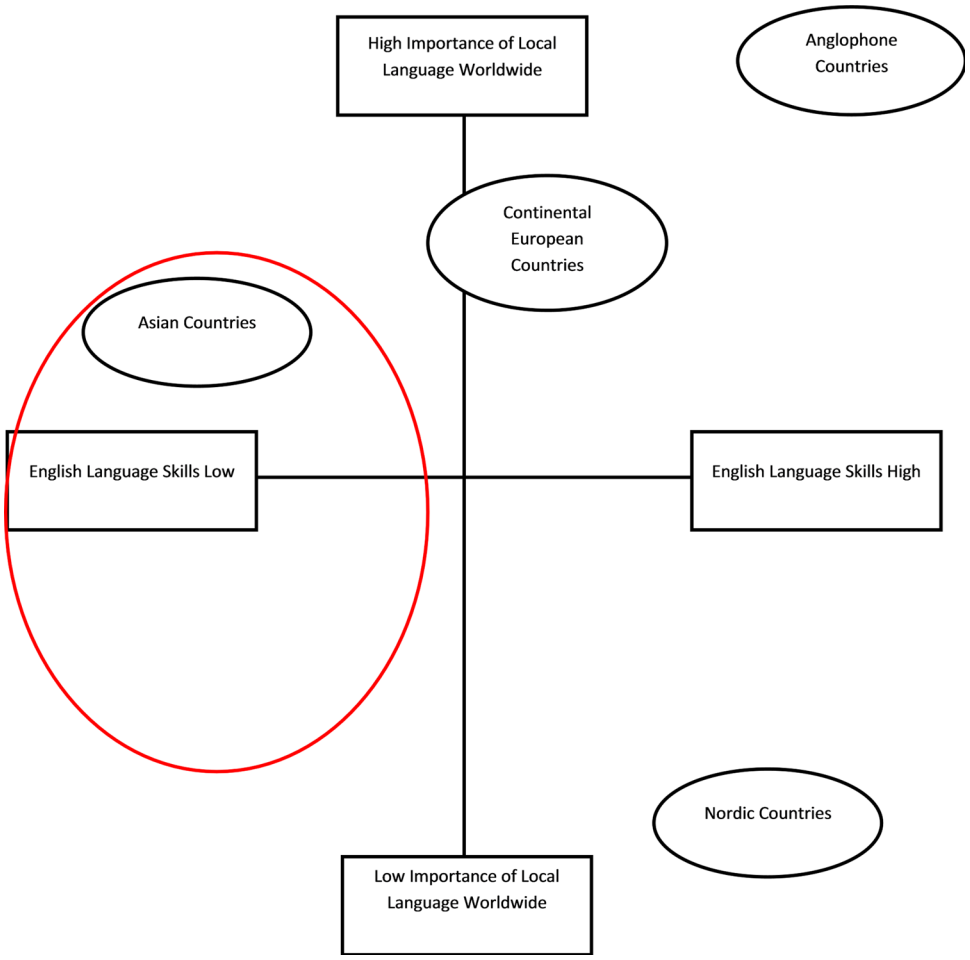
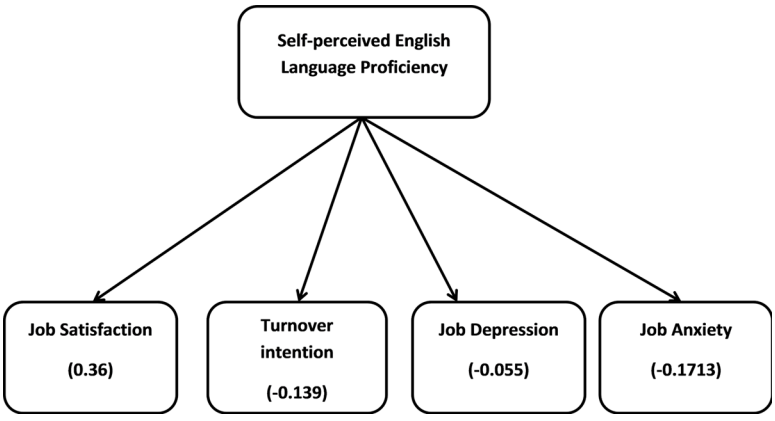


Figure 4. Model of the study



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Language is considered as most significant way of communication as (Charles, 2007) said: "only language can enable individuals and companies (and countries) to communicate". Now days multinational companies are using not only local languages but also single corporate language to communicate with the headquarters, subsidiaries and other stakeholders in information sharing (Feely & Harzing, 2003; Lauring & Selmer, 2010). However all employees are not capable to speak the corporate language effectively, which lead individual to avoid to communicate in the organization. Different authors have explained language barrier as obstacle in effective communication (Tenzer, et al., 2013). Impediments in communication also depend on the language differences. Jablin (1987) have anticipated communication factor as antecedents of several individual responses in the organization (i.e. job satisfaction and organizational commitment). Communication avoidance is topic of interest by numerous researchers in psychology and communication literature. Communication avoidance can be defined as unwilling to verbally communicate with other people (McCroskey, et al., 1985). Communication is also antecedent of job satisfaction and turnover intention. There is direct and indirect relationship between the communication, job satisfaction and turnover (Mohamad, 2008).

SELF-PERCEIVED LANGUAGE PROFICIENCY AND EMPLOYEE WELLBEING AT WORK

English language proficiency is referred as the competencies in general English and professional English (Xu & Du-Babcock, 2012). Barner-Rasmussen and Aarnio (2011) in his study mentioned that lack of language proficiency leads to negative consequences in the organization such as low density of communication, lack of information sharing and trustworthiness. Therefore presence of English language proficiency in individual working in the multinational organization in Asian countries (such as Pakistan) leads to effective communication, proper information sharing and trustworthiness. For example Jablin (1987) in his study showed that communication is antecedent of job satisfaction and organizational commitment.

As discussed earlier language differences produce negative consequences in the organization such as isolation and disconnection of the subsidiary manager with the head quarter (Björkman & Piekkari, 2009). Since there are very few reports available on English language proficiency, this study explores whether this is issue in organizational settings. Language proficiency is part of effective organizational communication system. So the presence of self- perceived English language proficiency may influence employee well-being at workplace.

English language is highlighted as an issue in multinational organizations in Asian countries (Harzing & Pudelko, 2013). Procedures defined to the employee working in multinational organizations in Pakistan are in English. Individuals, who have good expertise in English, understand the procedures more effectively than those who have less proficiency in English. Individuals who can effectively speak foreign language influence their commitment to their organization (Yamao & Sekiguchi, 2015). Furthermore a recent study conducted by Shafaei and Razak (2016) revealed positive relationship between psychological wellbeing and self-perceived English language proficiency Therefore presence of high perceived English language proficiency produces positive consequences in the organization. Hence based on prior studies this chapter explores the relationship between self-perceived English language proficiency and employee wellbeing at work.

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WHAT IS ROLE OF SELF-PERCEIVED ENGLISH LANGUAGE PROFICIENCY ON EMPLOYEE WELLBEING AT WORKPLACE IN TELECOM MNCS IN PAKISTAN?

To test the role of self-perceived English Language in Pakistan, a quantitative survey based study was conducted. Managers working in telecom MNCs were selected as the respondents of the study. The results from the study revealed that self-perceived English language Proficiency is significantly related to employee wellbeing at workplace.

A total 300 survey questionnaires was distributed to the respondents and 240 questionnaires were returned. Only 5 out of 240 questionnaires were unusable. The final usable questionnaires were 235 with a response rate of 78.3%. most of the respondents of the study were male participants 68.5% whereas female participants were consisted of 31.5% out of overall total respondents of 235. Majority of the respondents fall under the age range between 26 to 30 years old 42.1%. Respondents at the age of 25 and less years old were 20.4% followed by the age group of 31-35 years old 18.3%. Only 6.0% of the respondents were more than 41 years old. Further for the educational background, most of the respondents had degree 86.0% followed by the diploma holders 12.3%. There was no respondent under diploma level or form high school degree. In terms of respondents' organization, majority of the respondents were from Mobilink 35.7% followed by respondents working in Zong 32.3%. Respondents working in Telenor were 17.9% and the least were respondents working in Warid 14.0%. As per experience, majority of the respondents had 1 to 5 year experience 67.2%. Respondent with 6 to 10 year experience were 19.1% followed by the respondents with less than 1 year experience 7.2%. Only 1.3% of the respondents had more than 15 year of experience. With regard to organizational position, all of the respondents were managers.

PLS is generally used for the prediction, the goodness of theoretical model is acknowledged by the variance explained (R2) of the indigenous constructs and the substance of all the path estimates (Hair et al. 2014). After estimation of the path estimates in the structural model, a bootstrap analysis was used to measure the statistical significance of the path coefficient. Chin (1998) advocates 500 re-sampling when operating bootstrapping to estimate a parameter. Therefore, in this study the bootstrapping procedures with 500 re-sampling was used.

The bootstrapping results of the study revealed that all the direct hypothesis are supported in this study. Self-perceived English Language Proficiency is a significant predictor of employee's wellbeing at workplace. As shown in the Table 2.

Table 2. Hypothesis Testing

Hypothesis	Path	Std. Beta	Std. Error	t-value	Result
H1	Self-Perceived Language Proficiency -> Job Anxiety	-0.1713	0.0861	**1.9894**	**Supported**
H2	Self-Perceived Language Proficiency -> Job Depression	-0.055	0.0792	**1.6944**	**Supported**
H3	Self-Perceived Language Proficiency -> Job Satisfaction	0.3612	0.08	**4.5163**	**Supported**
H4	Self-Perceived Language Proficiency -> Turnover Intention	-0.1396	0.0738	**1.8921**	**Supported**

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Review of the literature suggests that self-perceived English language proficiency is a significant predictor of various job outcomes such as job commitment and psychological wellbeing (Yamao & Sekiguchi, 2015). In line with previous literature, it was found that there is a strong relationship between self-perceived English language proficiency and employee's wellbeing at work place (i.e., job satisfaction, turnover intention and job anxiety). English language proficiency is the key job prerequisite in most of the telecommunication companies because most of the verbal communication is processed in English language. Employees with high proficiency in English language are able to understand and communicate in English language leading to a positive job outcome such as job satisfaction, commitment and less anxiety. Also, employees who are proficient in English language understand their job roles and perform accordingly that makes them satisfied, less anxious and committed to their organization. See Figure 4.

Moreover, Yamao and Sekiguchi (2015) explained that self-perceived English language proficiency is one of the key components of an individual to survive in his organization by showing a strong commitment with his organization. The results of this study support the findings of Shafaei and Razak (2016). They have argued that individual's wellbeing at the job is correlated with self-perceived English language proficiency. Therefore, the findings of this study showed a strong correlation between self-perceived English language proficiency and wellbeing at workplace.

CONCLUSION AND RECOMMENDATION

Employees' wellbeing at workplace is critically significant for the organizations, to survive in highly competitive market. In connection with the point mentioned what organizations should do to enhance employee's wellbeing at workplace is limited in research. How to enhance employee's wellbeing at workplace must be a focus of the organization since it specifies organizational responsibility for workers' health. Furthermore, organizational efforts to enhance wellbeing at workplace will increase its reputation to use human capital for business operations. Though individual research effort was made to identify the predictors of employee's wellbeing at workplace, research based on these grounds is still limited in the developing countries such as Pakistan, particularly in telecommunication sectors. Thus, this study explored four dimensions of employee's wellbeing at workplace in telecommunication MNCs in the context of developing countries.

English language is not the first language in Pakistan, but the official communication in the multinational organizations in Pakistan is carried out in English. Individuals who are proficient in English language shows positive attitude towards their organization. That is why, this study has found that employees' perception of their English language skill has a key role in their job satisfaction, turnover intention and job anxiety.

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KEY TERMS AND DEFINITIONS

Anxiety: Is an emotion characterized by an unpleasant state of inner turmoil, often accompanied by nervous behavior, such as pacing back and forth, somatic complaints, and rumination.

Comfort: (Or being comfortable) Is a sense of physical or psychological ease, often characterized as a lack of hardship.

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Depression: Is a state of low mood and aversion to activity that can affect a person's thoughts, behavior, feelings, and sense of well-being.

Displeasure: Or pain in a broad sense, may be an experience of unpleasantness and aversion associated with the perception of harm or threat of harm in an individual.

Enthusiasm: Is intense enjoyment, interest, or approval. The word was originally used to refer to a person possessed by a god, or someone who exhibited intense piety.

Human Resource: Are the people who make up the workforce of an organization, business sector, or economy.

Turnover Intention: Is the act of replacing an employee with a new employee. Partings between organizations and employees may consist of termination, retirement, death, interagency transfers, and resignations.

Well-Being: Is a general term for the condition of an individual or group, for example their social, economic, psychological, spiritual or medical state; a high level of well-being means in some sense the individual or group's condition is positive, while low well-being is associated with negative happenings.

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Chapter 20
Disruption in HR Through Inclusive Emotional Culture: Key to Sustainable Growth in Indian Businesses

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ABSTRACT

Diversity in workforce has demanded the need to develop inclusive culture that suffices the needs, interests, and emotions of all equally. High-performing organizations have incorporated emotions in their mission, creating an emotional culture that accentuates emotional intelligence of their talent force rather than suppression of emotions. The chapter explains how and why organizational cultures are transforming into inclusive emotional cultures. Through an analysis of cases of Indian multinationals, the antecedents and outcomes of Inclusive emotional culture is described through Inclusive Emotional Culture Framework model. Views of HR managers are expressed through content analysis qualitative technique. The chapter provides a key to sustainable development of Indian businesses amidst the doldrums of global business environment through inclusive emotional culture integrating values of long-term sustenance and development.

INTRODUCTION

Sustainability through inclusiveness, emotional intelligence capabilities and values- driven business processes are the main agendas of sustainable development in the twenty-first century. The present era has seen a revolution in the science of emotions and sustainability through emphasis on emotional culture and emotionalytics. Although there have been fast advancements in technology and digitization, yet organizations shifted focus from perfect rationality organisational culture to bounded rationality-oriented culture. Massive disruption in HR practices and composition of organisational culture has been characterising

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organisations under the influence of global integration over the last two decades. Building an inclusive emotional culture has been the trend in the 21st century in order to achieve the goals of sustainability. It is not just the cognitive culture (shared intellectual values, norms, artefacts, and assumptions that serve as a guide for the group to think and behave), but importantly the emotional culture (the shared affective values, norms, artefacts, and assumptions indicating which emotions people have and display at work and which ones are been suppressed) that governs how innovative, team-oriented, customer-focused, or competent the employees are supposed to be (Barsade & O'Neil, 2016). Robust transitions in structure, culture and climate of business organisations has brought about shifts in demographic and psychographic trends of the workforce including their motives, emotions, expectations and work engagement levels.

Workplace dynamics constituting diversity in terms of gender, age, culture, emotions, innovative and motivational drives have called for a re-emphasise on aspects related to human capital management practices and crafting of an inclusive emotional culture, which caters to the needs of the highly diversified workforce. Inclusive culture that recognises, addresses and appreciates the emotions of every employee on an everyday basis can be instrumental in building engagement, leadership, ownership, innovation and high performance at every level of the organisation. High performing organizations such as Google, Apple, Coca Cola, PepsiCo, Southwest Airlines, HCL Technologies, Whole Foods Market, The Container Store, Zappos, Happiest Minds, Mahindra, Sap Labs India, Intuit India, Adobe India and many others have incorporated emotions in their mission statement. Some others like Cisco Finance, Ubiquity, C&S Wholesale Grocers, Camden Property Trust, Vail Resorts and many start-ups, emphasize the importance of fun to innovate and succeed. By doing so, they create an emotional culture that not only appreciate their emotions and feelings but enhances the Emotional intelligence of their talent force rather than suppressing.

A lot of disruption in HR practices has been happening in the new millennium in most organisations. To sustain, grow and remain competitive, it is crucial to retain talent force. However, the question arises, what exactly is the sustainable solution for talent acquisition, retention, high engagement and performance? Despite the hefty investments into HR strategies for accentuating employee satisfaction, commitment and productivity, engagement levels across the United States' workforce have remained stagnant and those worldwide considerably low. Survey reports state that the United States witnesses $450 billion to $550 billion of lost productivity and labour turnover due to low satisfaction among employees every year (Head, ACC, & Freedman, 2014). Hence the question arises- Why are employees detached from their jobs, their bosses and each other? How can organizations re-design their HR practices so as to build high performance work teams and a culture of commitment? How is it that the Indian businesses are soaring high despite the global slowdown? What is the secret behind the sustainable growth of Indian businesses?

Shaver P. et al. (1987) found that people can reliably distinguish among 135 emotions. But understanding the most basic ones like-joy, love, anger, fear, sadness is the initial step for any leader to manage his team and build a positive emotional culture. Thus, the present chapter presents a detailed literature review on the concept of emotional culture, dimensions of emotional culture and how to build positive emotional culture. The constructs of emotional intelligence and emotional labour have been thoroughly dealt. Through case based and content analysis qualitative study, practices building a sustainable emotional culture in Indian organisations have been discussed.

India is the fastest growing economy with a GDP rate of 8.4 percent in 2018. According to the World Bank, India overtook China to become the fastest-growing major economy in the world as of 2015 (ET, 2015). The robust growth in India's economy, businesses, literacy rate, technology, research, socio-cultural factors and the demographic dividend has placed this country in an envious position on the world map.

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India's rise to power and speculations of 'soon to become superpower', has raised expectations about how it is going to change the global order. As per a report by Ernst and Young, India's workforce population is going to rise to an estimated 900 million level by 2020, while American population (third largest in the world) is just 160 million people (Chris Matthews, Oct 30, 2017). Hence, hopes and speculations are increasingly placing a lot of importance on the fast growth and sustainability of Indian businesses, industries, economy, and society. Researchers have started focussing on understanding the organisational practices, culture and ethos in Indian businesses that have enabled them to sustain in economic recession and growing throughout. This study plays a significant role in understanding the organisational culture and people management practices that focus on accentuating the workforce strength and making these businesses stronger over the long term.

WHY SUSTAINABILITY?

In 1987, United Nation's Brundtland Commission's report stated sustainable development to be "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland Commission, 1987). Sustainability is a universal approach that is based on the three pillars of ecological, social and economic sustenance and growth, realizing the need to drive all the three together for lasting prosperity. In 2010, the Office of Sustainability at the University of Alberta proposed a more comprehensive view of sustainability that included the existence and role of people. The report defined Sustainability as "the process of living within the limits of available physical, natural and social resources in ways that allow the living systems in which humans are embedded to thrive in perpetuity" (Sustainability Summary Report and Recommendations, 2011). Sustainability is rather a value that is commonly shared by many individuals (of different types) and organizations who demonstrate this value in their policies, systems and culture.

Sustainable development of people, planet, prosperity, peace and partnership are the SDGs identified for universal development in the United Nations General Assembly with the 2030 Agenda for Sustainable Development (Wilkins, Hugh, 2008). Sustainability of economy, businesses and society revolves around effective diversity management, which has to be built on principles, embodied as pillars of an inclusive culture. Building on the principle of "leaving no one behind", the agenda puts impetus on a holistic approach to achieving sustainable development for all. Thus, sustainability in business also calls for equal opportunity, equal treatment, accessibility and development of people of all categories. In the polarised business world, sustainability and retaining talent force involves focus on inclusion and not diversity, which implies catering to the emotions, feelings, needs and interests of all types of individuals belonging to different genders, ethnicity, disabled, age, colour, special categories like LGBT (Lesbians Gay Bisexual, and Transgenders) etc. in the work groups. This definitely mandates sustainable HRM (Stefanie App, Marion Büttgen, 2016) and an inclusive organisational culture. To achieve the goals of sustainable development, transformations in individual behaviour patterns and decision-making processes is necessary. Cognition and emotions play decisive roles on sustainable behaviour (Kals & Maes, 2002).

The psychology of sustainability and sustainable development has recently become an upcoming field of research. It mainly emphasizes on the sustainability of interpersonal and intrapersonal competencies of individuals, groups and communities, including aspects of reflexivity, values, purpose, and progress for the sustainability of projects harmonizing the different perspectives (Di Fabio, & Kenny, 2018). The United Nations stated in its recent conference titled "Unlocking Your Emotions" in May 2019 that

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emotional intelligence is a powerful tool to support the implementation of sustainable development goals. Daniel Goleman quoted while deliberating, "emotional intelligence skills are key to the jobs of the future and a better predictor of workplace success than IQ and other measures of intelligence" (Academic Impact UN Report, April 18, 2019). It was concluded that EI, mindfulness and nonviolent communication are effective tools that could be implemented to help achieve sustainable development and a more peaceful and prosperous world.

Sustainability in the business context describes the ability of the entity (brand, company, or management) to deliver on its promises consistently to all its stakeholders (customers, employees, government, public, etc.) at all levels over time for better employee outcomes (Backhaus, 2004). It can be perceived through different approaches as per various researches. Substance oriented approach towards sustainability emphasizes on the balance between the consumption and regeneration of its human resources for the survival of an organisation (Müller-Christ & Remer, 1999). For such a balance they focus on creating value for their potential and existing employees by investing on their long-term retention and utilisation (through effective health and safety benefits, socialisation, managing aged or special category workers, female employee friendly policies, competency development, culture of lifelong learning). Sustainable HRM facilitates organisations to achieve its goals of fulfilling the expectations of its employees and also to attract, acquire, retain high quality and satisfied workforce (Ehnert, 2009; Jabbour & Santos, 2008). Building and promoting the culture of sustainable HRM and being perceived as a psychological benefit by its users, is very crucial for an organisation to successfully operate, leveraging maximum potential of its committed and competent workforce. This is possible only when a working environment is nurtured that replicates a corresponding image of 'sustainability' in the minds of its employees (Stefanie App, Marion Büttgen, 2016).

IS INCLUSIVE CULTURE REQUIRED?

Inclusivity is the degree to which an employee (with individual differences) is accepted as an insider by the organisation and accepted in all work systems (Pelled, Ledford, & Mohrman, 1999). It is the sense of belongingness, ownership and equal participation in all work processes irrespective of differences (Lirio et al., 2008). The philosophy of 'inclusion' directs the group effort towards the term 'all' equally (April & Blass, 2010). The twenty first century has seen the transition of the discourse on diversity to the concept of inclusion (Nair & Vohra, 2015) with a purpose to create a culture that perceives, appreciates, manages and utilises each person's emotions, values, beliefs, cognitions in a manner that seems equitable to all. Inclusion is considered to be a process of change as well as an affective outcome or feeling of belongingness, respect, fairness etc. (Dobusch, 2014). Culture of Inclusion are mainly driven by perceptions of fairness, respect, value, equity and belonging (Nair & Vohra, 2015). Inclusion is required wherever diversity or differences exist. The polarised economy thus calls for inclusion in every aspect of social life, education and business processes.

Building a winning and sustainable culture is always a common vision and fruitful outcome (Smircich, 1983; Schein, 1985). A culture of inclusion depends on the level of individual differences perceived in the group and extent of mutual recognition demanded. 'Inclusion' is a word more important for sustainability than diversity. Organisations such as AT &T, Deloitte, HCL Technologies, Verizon and many other Fortune companies emphasized on hiring people with diversified backgrounds- skillsets, gender, race, ethnicity, minority, disadvantaged and ages. Focus of leadership, management policies and HR practices should

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be to distribute the diversified workforce evenly and equitably across the company's divisions to create conducive and inclusive working culture, creating opportunities for all (Morais et al., 2014; Lundrigan et al., 2012; SHRM, 2009). Promoting an inclusive culture implies that respect is paid to the plurality of subcultures, and none are exempted from this ethical discourse. Each subculture is provided an equal opportunity to participate in shaping the cultural backbone in the organisation, which includes values, norms, policies etc (Pless & Maak, 2004). Thus, an inclusive culture is empowering, engaging and high performing as each one is heard and involved equitably in decision-making, problem-solving, innovation and moulding the organisational culture towards one that sustainably adds value to the company's performance (Pless & Maak, 2004). A culture of inclusion is said to exist when strategies, processes, systems, values and norms are based on diversified knowledge and perspectives of the overall group (Holvino, Ferdman, & Merrill-Sands, 2004). Open communication channels, diversity-based recruitment, training, promotion, compensation and career growth and planning practices that establishes an aura of 'working climate for one and all' constitutes the building blocks of an inclusive culture (Daya, 2014). The feeling of one-ness, respect, fairness, belongingness, tolerance, empathy and commitment results in creating psychological contract and engagement, which eventually leads to sustainable development of people, practices and organisations. No doubt, Inclusivity is essential to achieve the sustainability goals and also to create sustainable values and HRM practices in organisations.

As per a Deloitte report (2012), a workplace where just 10% more employees feel 'inclusive', the company would be able to increase work attendance by almost one day per year per employee. In addition to this, the business performance is higher in terms of people innovation, responsiveness, customer service and team collaboration. As per the monthly Labour review of the United States Bureau of Labour statistics (Dec. 2015), the projected workforce is expected to reach 163.8 million in 2024, would include more aged workforce, more women with a share of women in the workforce projected to be 47.2% in 2024, more educated employees (with technical qualifications), more Asians and Africans, with good representation from the minority LGBT group. The millennial workspaces of present and future, is thus characterised with more diversity, dynamism and soaring expectations, which can be sufficed through inclusive work culture with high emotional intelligence and practices that nurture positive emotions conducive for accentuated creativity and team performance.

Surveys have revealed that employee perceptions about inclusion in Indian workplaces accounted for 43 percent of team citizenship behaviour, which implies that focus on inclusion is essential to harness the potential of diversity (Prime & Salib, 2014). India being a highly diversified country with multicultural teams in its workplaces has been experimenting with a plethora of HR practices right from diversity-based recruitment to mentoring practices that bring in higher inclusivity in organisations. This has helped them to develop sustainable HRM practices and loyal workforce.

Inclusive work culture in Indian organisations have focussed on the core values of mutual respect, tolerance, spirit of integrity and harmony, collaboration, open communication, belongingness, trust and engaging. Emotions rather than cognition has been guiding most of the decisions regarding inclusive people practices in these organisations. Emotions are fundamentally important for sound moral development and healthy interpersonal relationship, which is invariably crucial in building a culture that fosters inclusion and recognizes differences. This has helped Indian industries to function more smoothly that its political environment and also to sustain the global economic recession. Godrej group is one such FMCG company that has brought about a turnaround in its business outcomes through its Diversity and Inclusivity (D&I) initiatives. With a strong belief that passionate, rounded individuals with diverse interests are better performers, they have institutionalised a culture and HR practices that encourage

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employees to 'bring out their whole self and show their full potential at work'. Their health insurance benefits allow the members to add their 'partners' as a beneficiary not just their spouse, thus bringing in an open outlook in work culture too. Their regular diversity - sensitisation workshops across different geographical locations facilitates employees to share the common belief that integrating openness and inclusiveness begins with people and workplace.

EMOTIONAL CULTURE: A SUSTAINABLE HR SOLUTION

Emotions and feelings are a critical component of an inclusive culture and when that is met, much of the goals of inclusiveness is attained. Studies on Pennsylvania Railroad System employees (Hersey, 1932) and factory employees (Roethlisberger & Dickson, 1939) stated the importance of caring, affection, compassion, and tenderness, and the negative effects in the absence of these emotions, particularly in interpersonal relationships with foremen. As mutual recognition is usually facilitated through emotional recognition and solidarity (Honneth, 1994; Maak, 2006), thus emotional capabilities are critical in any interpersonal transaction. A study on an analysis of 25 common competencies stated that demand for social and emotional skills will grow across all industries by 26% in the United States and 22% in Europe, due to automation, between 2016 and 2030. Thus, companies should gear up to focus on developing emotional and social skills among their employees to help withstand changes, challenges, and progress (Jacques Bughin et al., 2018).

Emotions are crucial in social analysis as they play an impactful role in the process of socialization. Emotional culture is a regime or way of life that favours the perceiving, managing, controlling and utilising emotions of each and every member in an effective manner so as to achieve the overall purpose. It places importance on positive emotional expression, emotional management and satisfaction of desires. Organisational climate that implements HR practices nurturing emotions like joy, satisfaction, respect, trust, appreciation, achievement, compassion, pride etc is always high performing, creative and sustaining, rather than one with anger, frustration, fear and mistrust. Positive emotional culture constituting affection, pride, compassion, empathy, joy and gratitude foster supportive employee behaviours and organisational citizenship among employees. This invariably enhances employee commitment, motivation, engagement and retention. Symmetrical communication and responsive leadership builds a positive emotional culture in organisation (Linjuan Rita Men & Cen April Yue, 2019), therefore promoting sustainable HRM and people development. Thus, it is important to institutionalise an organisational culture that promotes the expression and sharing of positive emotions and does not coercively suppress negative emotions. Moods affects and discrete emotions (satisfaction, trust, joy, pride, anger, fear) have their own appraisal antecedents, subjective experiences, and action tendencies that direct people to respond to their existing situation. These emotions also have intrapersonal impact on the person experiencing them in terms of attention, motivation, creativity, information processing and judgment, and well-being, which drive impulsive or mature expressions as per the ability of the individuals to control them (Cynthia Fisher, 2019).

Alice Isen (1999) posited that a conducive emotional culture in the organization cultivates creativity, mental efficacy, making people efficient at comprehending and analysing information, adopting decision rules in judgmental problems, and in adopting flexible decision-making styles. As Daniel Goleman (2000) in his bestseller 'Working with Emotional Intelligence' explains,

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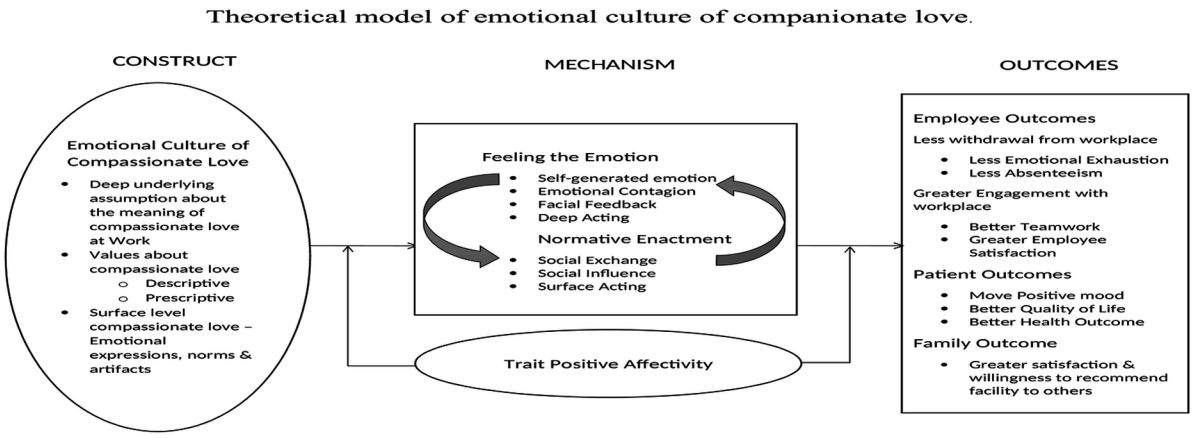
If you see a star performing team, you're seeing a very high group IQ. But what predicts the actual productivity or effectiveness of a team is not the potential—that is, the best talents of every person—it is how people are valued on that team. It is how people feel there's harmony, that we get along, that we surface simmering issues, that we take time to celebrate, that we know each person's strengths and that we step aside when it is time for this person to come forward. In other words, that we are a team that has a high emotional intelligence.

Every job has its affective component and if that is not re-enforced due to weak emotional culture, the effectiveness on job performance declines. For example, healthcare jobs demand compassion and love over impatience and anger while security and investment jobs involve fearlessness over recklessness. Ripple effects of unexpected emotions expressed in workplace are immense and eventually lead to poor interpersonal relations between colleagues and boss, ineffective communication, role conflicts, underperformance, frustration, psychological contract breach, burnout and even high labour turnover. Organisational culture is usually a set of norms, beliefs, values and emotions integrative to the mission statement; and is also often enacted in the 'micro moments' of daily organizational life (Barsade & O'Neil, 2016). These constitute small gestures like acts of kindness, support, enjoyment or sense of achievement rather than bold declarations of feelings. Cultures that are weak in companionate love, expressions of affection, caring, or trust among employees, show indifference and callousness towards each other, due to low intensity and crystallization (Jackson, 1966; Barsade & O'Neil, 2014).

Figure 1 illustrates the variable of emotional culture of compassion, main mechanism involved in creating the emotional culture (through 'feeling the emotion' equivalent to emotional intelligence and emotional labour and through normative enactment) and the outcomes (in terms of employee outcomes and stakeholders' outcomes and better quality of work life and engagement of the employee) (Barsade & O'Neil, 2014).

Figure 1. Theoretical model of emotional culture of companionate love
Source: Barsade, Sigal, & A O ' Neill, Olivia. (2014).



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Various HR practices from hire to exit cycle, emotional modelling (managers consciously enacting expected emotions to display a 'feel good' factor), company interiors, workspace designing, posters, furniture, emotions tracking Apps, etc also makes up the organisational culture, reminding employees and management to adhere to such emotional requirements and help integrate inclusivity in work culture. For example, the Indian company, Religare Enterprises has recruitment and selection practices that assess candidates based on the emotional intelligence and other emotions demanded by their jobs, EI based training and 720-degree appraisal system that appraises employees based on emotions as an important criterion. Jubilant Organosys keeps EI of its employees on the priority list of competency development and routinely checks on the EI levels of its employees. HCL's excite-enthuse-engage HR policy is world famous in turning around the company and building an employee-first culture.

Thus, it is significant to note that every organization has an emotional culture, even if it's one of suppression (Barsade & O'Neil, 2016). Organisations are rapidly moving towards a culture that nurtures its employees' emotions, directs them towards positive emotions, beliefs, values, common vision and utilises those emotions in driving their job motivation, psychological contract and workplace behaviour. Global companies are adopting HR practices to continually develop the emotional competencies of their employees and keep them emotionally connected through an integrated inclusive emotional culture that caters to the needs and interests of diversified workforce. Researches posit that emotional culture influences employee satisfaction, burnout, teamwork, and even hard measures such as financial performance and absenteeism (Barsade, & O'Neill, 2016).

Disruption is happening in the HR space in building an emotionally sustainable culture. Some have included emotions in their mission statement, management principles and organization culture, eg- Coca Cola, PepsiCo, Tata Group, Whole Foods Market, and Zappos have listed 'love' or 'caring' among their corporate values. Emotional artificial intelligence technologies, EI tracking apps and emotionalytics are adopted in work culture to track and measure the moods and emotions of employees on a frequent basis. Training programs and performance appraisals integrating EI and engagement into their system is a regular practice in most organizations. Infosys, Indian Railways, Entropik tech, Tata sky and many millennial organizations are now moving ahead to develop a much stronger emotional culture by fostering the EI of their employees, providing an engaging experience for higher talent retention and performance outcomes.

DIMENSIONS OF EMOTIONAL CULTURE

Emotional Intelligence

Emotions play a pivotal role in almost all actions. People who are able to manage emotions are the best performers and leaders. About seventy five percent of an organization's success can be attributed to the emotional intelligence of its employees. Emotions are the drivers of motivation and attention; identify and facilitate change management, and influence behaviour and actions (Fredrickson, 2001). Emotions have been found to be determining factor in developing the ability of resilience and capacitate people to cope with challenges proactively, build new vision, enhance one's competencies and connect with others for effective teamwork (Fredrickson, 2001; Fredrickson & Branigan, 2005). Emotional Intelligence is an individual's capability to perceive, understand, control and manage emotions of oneself and others leading to better personal effectiveness, interpersonal relationships and social behaviour (Salovey and Mayer, 1990). Emotional culture emphasizes on practising of certain emotions by ensuring the devel-

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opment of high EI (or EQ) and expressing expected emotional labour display acts. EI is defined as an array of noncognitive capabilities, competencies, and skills like intrapersonal skills, interpersonal skills, adaptability, stress management skills and general moods that influence one's ability to succeed in coping with environmental demands and pressures (Bar-On, 1997, p. 14). It is a decisive factor in success of those individuals possessing higher levels of EQ (Bar-On, 1997). The importance of EI at work cannot be understated, as it has been found to influence leadership abilities by facilitating an effective handling of emotions, better ways of handling the needs of colleagues, and motivating them, thus making them feel contended and accomplished at work (Goleman, 1998).

EI has been stated to be a wide constellation of emotion-related self-perceptions and dispositions about self and others, assessed through self-report (Petrides & Furnham, 2003, p. 40). Studies conducted on managers' performance behaviours under two dimensions: "what they accomplish" and "how they accomplish it" through MSCEIT clearly illustrated that EI plays a more significant role in how managers do their work (leadership abilities) rather than in what they accomplish (Rosete, 2005, 2009). Emotions stimulate interest, focus attention, indicate the need for transformations, and direct people to appropriate actions (Fredrickson, 2001). They influence the way people show resilience and cope with challenges, define new goals and means to reach the ends, learn new competencies, build relationships and yield higher outcomes with the support from others (Fredrickson, 2001; Fredrickson & Branigan, 2005). Occupational self-efficacy and commitment is also found to be higher in individuals with increased EI (Rathi & Rastogi, 2009). Extant researches assert that emotional intelligence involves the capacity to reason accurately with emotions and emotional information, and about one's and others' emotions to enhance thoughts, decisions and actions (Mayer, Salovey, Caruso, & Cherkasskiy, 2011).

Therefore, building an emotional culture, where people are encouraged to sustainably develop their emotional capabilities and EI, while also contagiously pursuing positive emotional (beliefs/values) norms, becomes a more fulfilling, enthusing and engaging place to work. Much of the objectives of sustainable HRM and sustainable development of organisations are accomplished through building a high EI inclusive emotional culture. As the 21st century witnesses the transformation of business enterprises to social enterprises with the fast-changing expectations of the millennial workforce, the emotional competencies of organizational leaders are the crucial decisive factors in accomplishing organizational mission and goals, besides building an engaged and valued workplace for all (Barthwal & Som, 2012). Indian companies like ITC, Indian Railways, Whirlpool, GE, Gillette, Jubilant Organosys, Infosys, Coco Cola India, Hay Group India, Pepsico are few of the Indian companies that have realized the need for ongoing EI assessment and training to reap higher ROI in the longer term. Thus, emotional culture is not only defined by the emotions expressed and followed by all, but also the EI of its employees.

Emotional Labour

Impulse is the medium of emotions, seed of all impulse is a feeling bursting to express (Daniel Goleman, 1998). Excessive expression of positive or negative emotions (such as excitement, joy, anger, frustration, etc.) causes an adverse effect on the interpersonal environment, which should be invariably controlled for better performance. Hochschild (1983) introduced a breakthrough concept in organisational psychology called 'emotional labour' in 'The Managed Heart- Commercialization of Human Feeling'. Emotional labour (EL) has been defined as the "the management of feelings to create a publicly observable facial and bodily display" (Hochschild, 2003, p. 7).

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Most of the jobs today involve interpersonal interactions for business development especially the service sector jobs that have certain expected norms and standards for display of emotions to their stakeholders. EL is crucial in this context, when most jobs call for a capability to deal with people rather than with machines, for more interpersonal skills and behavioural transactions and fewer mechanical skills (Hochschild, 2003, p. 9). Service employees like educators (Meier et al., 2006), restaurant employees (Hallett, 2003) etc. are required to manage their own emotions in order to manage the emotions of customers (Leidner, 1999) for better work environment, goodwill and high performance. Hence, in order to perform better and fulfil organizational expectations, employees in service organizations frequently regulate and manage their emotions, a process generally called Emotional Labour (Hochschild, 1983; Grandey, 2000). Employees usually resort to four types of emotional labour displays – deep acting, surface acting, genuinely expressed emotions and suppression. During this process of emotional labour and stress, they often develop some negative emotions that contradicts with the organizationally desired emotional display, leading to dissonance, suppression, intrapersonal as well as interpersonal conflict and performance deterioration. This may lead to behavioural and decision-making issues in the employee and may lead to adverse results in terms of employee and organizational performance.

Gosserand and Diefendorff (2005) defined Emotional labor (EL) as the process of regulating one's emotional displays in response to work display rules so that goals can be achieved. The main objective of having pre-determined display rules is to dictate the emotions that employees are supposed to express in order to facilitate the attainment of work goals. (Zapf et. al, 1999) prescribed a high amount of empathy and emotional involvement in order to avoid treating other people like objects in difficult interpersonal situations (specially with clients, customers, subordinates and children). For example – service employees in hospitality sectors like in Café Coffee day, Pizza Hut etc are trained and reminded through smileys, posters and their own work display rules that despite any challenges they always need to smile and be polite. This owes to a great extent in determining the inclusive emotional culture of the organisation.

EL facilitates task effectiveness and self-expressions and is often the major cause for customer dissatisfactions and performance issues at workplace (Ashforth & Humphrey, 1993). Thus, managing EL is an important strategy for building an emotional culture and manage inclusivity. There are usually two perspectives of emotional labour as predictors of burnout and employee ineffectiveness: job-focused emotional labour and employee- focused emotional labour (Brotheridge & Grandey, 2002). Through such EL strategies employees can manage their emotional displays effectively while interacting with colleagues, bosses and customers of diversified backgrounds and struggling with their work pressures, ending up with satisfying transactions. Emotional labour and attributional ambiguity theories have the potential to provide prescriptive understanding about how the communication of emotions and evaluation contribute to the issues like marginalization and emotional costs faced by minority employees in a diversified workforce at the personal and organizational level (Wong, Kathleen, 2007). Indian services and BPO sector have seen a robust boom over the past two decades. Much of the demand for Indian workforce in these sectors is mainly because of the high-grade soft competencies that Indian employees possess in terms of emotional adaptability and emotional labour that suffices the demand for high quality customer service. Emotional culture with right emotional labour displays is responsible for promoting happiness and engagement leading to sustainable development of people and services.

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Indian Business Cases of Disruptive HR Through Inclusive Emotional Culture

Companies in majority of Indian industries have integrated disruptive HR practices into their culture to build a sustainable emotional culture. The importance of EI, appraisal of certain emotions and eliminating rather than suppressing certain other negative emotions in workplace has been recognised and applied in Indian companies. Emotions have been aligned in the mission and corporate philosophy, EI assessments and training is a usual activity. Emotions are tracked adopting various types of gamification and emotioanlytics software applications (artificial intelligence software to track and measure the EI).

Indian railways, the country's national railway system operating under the Indian Central government and the fourth largest railway network in the world (by size of 42,988 miles route distance as of April 2019), has adopted a milestone intervention to bring about a turnaround in its decision-making body. In order to bring down the number of trade union strikes and protests, accidents, derailments, train collisions; and improve the job-related behaviour of train drivers, officers, and managers emotional intelligence assessment and training process has been undertaken on a large scale. Around 1800 Railway officers (250 in the rank of additional secretaries, general managers, principal HODs; 150 in the rank of joint secretaries, chief workshop managers and additional DRMs; and 1400 officers of rank of deputy secretary, director, junior administrative) have been identified to undergo the EI testing and EI training workshop to enhance their decision making capabilities and job performance. The benefits that are expected to be accrued from this process which costs 423 USD to 595 USD per employee has a high perceptual value, since the initiative of building a culture of emotional intelligence among its officers is unprecedented in the Indian government. As quoted by Railway Board chief Ashwani Lohani, "the focus is on 'satyanishtha' - a mission for inculcating ethics and integrity among the railway employees. EI is an input in that direction" (Sharma, Dec. 2018). It is believed by the higher authorities of Indian Railways that if emotional intelligence and spiritual intelligence is enhanced, rapport with trade unions would improve resulting in lesser strikes and better IR (industrial relations) as well as customer service. As a result of this initiative focussed on building a positive emotional culture, the world's fourth largest railway network has aimed to improve the quality of its services to customers and accentuate employee engagement.

Happiest Minds Technologies, a next generation digital transformation, infrastructure security and product engineering services company located in the IT capital of India, Bengaluru has adopted positive emotions in its name, mission, vision and values to build a work culture where team spirit, joy, mindfulness, integrity and social responsibility connect employees, leaders, work, clients and customers together. As the name suggests, their mission says- "Happiest People, Happiest Customers". Their vision speaks about being the Happiness Evangelists for each other, customers and society, be recognised for thought leadership, be leader in social responsibility initiatives. Thus, as the name of the company suggests, their ultimate aim is to create happy customers through nurturing happy employees who are highly creative, innovative and empowered to offer the best service. The acronym 'SMILES' describes the company's ethos, and stands for the six core values that every employee proudly imbibe and follow- sharing, mindful, integrity, learning, excellence and teamwork.

The organisational culture has clearly mentioned certain predictive factors that are antecedents of its success and happiness irrespective of the nature of the business. They are organizational factors- fairness, transparency and joy in workplace, and individual oriented factors such as wellness, enriched personal life and giving back to society. The Happiest People Framework is built on the 7Cs of Culture, Credibility, Collaboration, Contribution, Communication, Community and Choice. The organisation has well-crafted

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wellness program as one of its disruptive HR practices that adds extra value to its happy employees. The Happiest Minds' Wellness Program constitutes the 7Ws of Physical Wellness, Spiritual Wellness, Intellectual Wellness, Professional Wellness, Social Wellness, Emotional Wellness and Environmental Wellness. These are nurtured by aligning activities, logistics, facilities and expertise of the organization through an array of Wellness schemes.

Emotional Wellness programs in Happiest Minds is cultivated through a wide range of activities such as Good Samaritan Network, Buddy programs, Stress Management lessons, Emotional Intelligence training and assessments, Emotions gamification and Mentoring. Programs such as Group activities, Celebrations, Get-togethers, Blood donation camps, Circle of Happiness and Diversity initiatives such as Aura, the Women's council promote social skills, team spirit, trust and joy to work inclusively among all. Competency Building, 360-degree feedback-based Performance Enhancement Processes and rigorous Talent Reviews facilitate in improving professional effectiveness among the employees. Social Responsibility is a core value of Happiest Minds. Such disruptive practices make this company culture the most unique one to foster the feeling of wellness, happiness and sustainability in mankind.

Pidilite Industries Limited, Indian-based adhesives manufacturing company focus on building a culture based on creativity, relationship-building and people friendly HR policies that respect the emotions of all. Pidilite Industries President (HR), Rahul Sinha stated-

At around 8pm every day, we take a round of the office to see if anybody is working late. If we find someone repeatedly working till late, we have a chat with his/her boss and ask them to review the employee's workload. Similarly, if somebody wants to work on a Saturday, they need to take special permission from HR.

Pidilite offers to its employees one day per week as "work from home". These initiatives have emerged from their "listening" culture. The organisational culture emphasizes on trust, empathy, transparency and maintaining high ethical standards as the most critical values to attain sustainability and high performance. Thus, the company boasts of not only being a pioneer in adhesives that create the ever-lasting bonds, but also nurturing ever-lasting relationships with employees.

TCS, the Indian IT giant works with a partner company called 'Courageous Success' to maintain its emotional culture centred around EI building of its talent force. As quoted by TCS manager of HR,

We work with coaches to focus on our own emotions, and also to understand the emotions, feelings and triggers of our closest colleagues. This can be hugely helpful in knowing what pushes an emotional button for someone……We are also piloting a meditation week to help team members work through their emotions at work, how to control stress, anxiety and difficult relationships with colleagues. (Kati Chitrakorn, March 31, 2016)

Organisations are increasingly adopting apps to help individual employees and teams log their emotional reactions to various activities and make the connection between their moods and productivity. Through emotionalytics, the trends in emotions experienced and recorded by every employee is statistically understood and strategies taken to appropriately cater to positive or negative trends in employee emotions. Entropik Tech is India's only Emotions - AI start-up offering a full suite of emotion recognition technology options to its clients for assessing emotions of its customers and other stakeholders. The

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designers of this Emotionalytics start-up have been nurturing their creativity within a culture of fun, wellness, humour, flexibility, innovation and social responsiveness.

INCLUSIVE EMOTIONAL CULTURE IN INDIAN ORGANISATIONS

Cultivating the right emotional culture, mandates people to feel the emotions valued by the organization or team for achieving their common vision. This may involve emotional modelling, enhancing emotional intelligence to actually internalise those emotional norms or adopting any emotional labour strategies (deep/surface acting, genuine expression or suppression). Through harnessing what people already feel, modelling and imitating the emotions that are required and motivating employees to fake the emotions till they genuinely feel it, a positive emotional culture can be created and sustained (Barsade & O'Neil, 2016).

Recently a survey and focus group discussions of HR experts from three multi-national organizations located in the Silicon Valley of India was conducted. Opinion about existence and structuring of emotional culture has been solicited and analysed by the author. HR experts were identified based on the suitability and position in the company for the study to gather perspectives on certain aspects like-

- Can emotional culture suffice the requirement of inclusivity in workplace?
- How can emotional culture be built?
- What ways do you propose to cultivate an emotional culture in your workplace?
- How can emotional culture actually help the organization to sustain?

Semi-structured interviews and focus group interviews of HR managers were conducted for thirty minutes each and responses recorded. The HR managers belonged to three companies coded A, B and C (actual identity kept confidential) from different industrial sectors. Each HR manager was administered through two sets of interviews – first individual interview and the other, focus group interview. Consistency of the opinions was checked and validated. Thereafter the primary data was analysed and interpreted. Company A belonged to healthcare sector, privately owned, headquartered in Bengaluru, India, with employee strength of 19,000. Company B belonged to IT sector, headquartered in India, with public ownership and employee strength of 225,501 employees, operating in 50 countries and revenue of 11.8 billion USD. Company C belonged to retail sector, privately owned, headquartered in Mumbai, India, employee strength of 55,000 and revenue of US$6 billion. Based on thorough analysis of information recorded from the focus group interviews the following facts about emotional culture and HR disruptive practices were identified. Table 1 shows the analysed interpretations from the interview conducted for HR managers of Company A (healthcare sector), Company B (IT sector) and Company C (Retail sector).

The content analysis of the opinion of HR managers have shown direction to conceptualising a model for structuring an Inclusive Emotional Culture within the organisation. Figure 2 illustrates the Inclusive Emotional Culture Framework (IECF). Based on the opinions sought from the HR managers, the IECF framework has been conceptualised. This framework shows clear direction as to how an inclusive emotional culture can be built to attain sustainability over a longer term.

The IECF framework shows that the first step in the process of determining inclusive emotional culture is understanding its need through the recognition of the extent of workforce diversity existing in the organisation. Based on degree of differences and workforce diversity aspects, goals of inclusion are determined and analysed. Goals of Inclusion become the determinant for building the emotional culture

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in the organisation. Emotional intelligence of each and every individual influences their emotional labour displays and strategies. EI and EL influence the determination of emotional culture that aligns with the goals of inclusion of the organisation as well as the emotional set up of each groups of employees. Conducive emotional culture can be built by clearly stating positive emotions like fun, trust, creativity, affection, support etc. in the mission statement of the organisation. Values to be followed by each employee should be clearly mentioned in the culture statement descriptively and prescriptively. Goals based on emotions fulfilment to be framed and based on these goals HR practices have to be designed. For example- framing the goal of 'becoming the happiest and emotionally intelligent company within two years". This goal definitely emphasizes on fostering a positive emotional culture with fun, happiness and emotional intelligence at its forefront. Eventually its HR practices are aligned and executed to achieve these goals and the organisational workforce becomes highly productive, contended and engaged. The outcomes of emotional culture are high levels of inclusion, employee satisfaction, happiness quotient (HQ), deeper employee engagement, less absenteeism and turnover, competency development, commitment and higher productivity among employees.

Table 1. Emotional culture in Indian organisations

Company A (Health care)	Company B (Information Technology)	Company C (Retail)
By identifying and expressing emotions as per organisational requirement, we have been able to create a workplace for all without differences.	Respecting emotions of employees and aligning them with organisational vision, we have been able to innovate and work in teams in an inclusive manner	Assessing emotions of employees have enabled in developing a focussed workforce and eliminating them, who could not align their emotions with others and with organisational purpose.
By developing emotional goals and integrating emotions in mission, vision statements	Identifying and defining values to be practiced by every member of the organisation	Creating emotions and value oriented organisational culture. HR policies to be based on emotions pre-stated in the company philosophy.
EI training, Emotions tracking, emotional appraisal, gamification to orient employees about emotions that needs expression/ elimination.	EI training and assessment, Emotionalytics and tracking emotions through apps	HR practices like recruitment, selection, training, appraisal, career growth based on job related emotions/values to be followed in the organisation. Artefacts, interiors of workspace, posters, emoticons, EI tracking apps can help nurture positive emotional culture
Making sustainability development the emotional goal of every employee	Integrating sustainable development and innovation into organisational culture through emotions employees	Sustainability is a goal, that can be accomplished by driving people's emotions in that direction

Practical Implications and Future Research Directions

The IECF model provides systematic flowline to HR managers for cultivating positive emotional culture that fosters sustenance of multiple cultures and people together. Diversity and inclusiveness are the precursor of any changes needed. Several studies on organisational psychology have identified the impact of cognitive, emotional and social processes on diversity- inclusion within groups (Kearney et al., 2009; Stockdale & Crosby, 2004; Hobman et al., 2003). In early anthropological studies of group dynamics, strategic emotional expression was found to facilitate group cohesion by dominating individual feel-

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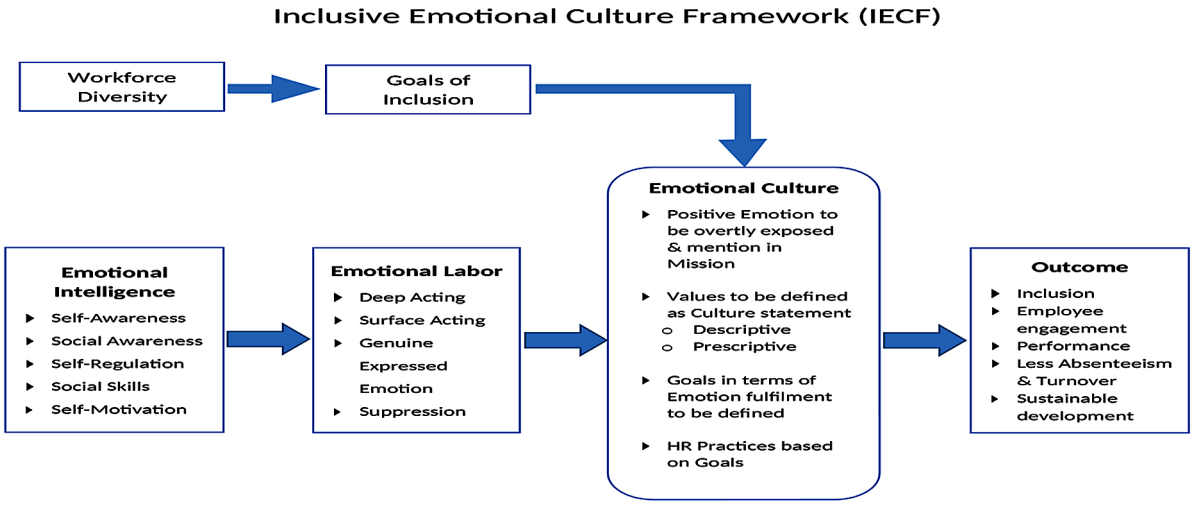
ings and synchronizing interpersonal behaviour. Social identity theory illustrated that identifying and managing differences at intrapersonal and interpersonal level when working in groups leads to better performance outcomes (McKay et al., 2009).

Figure 2. Inclusive emotional culture framework (IECF)



Studies on emotional contagion shows that people in groups "catch" feelings from others through behavioural observation and imitation, and subsequent changes in brain function leads to a ripple effect of the same emotions throughout (Barsade, 2002). This can be practically applied in all teams and groups with no investment of money, but with conscious investment of positive emotions, such as a smile or positive greeting. Cognitive re-appraisal, listening and eliminating negative emotions through consulting, artefacts and posters exhibiting positive emotions like joy, fun, excitement, curiosity, respect, trust can spread the required emotions in workplace. Happy pictures of moments with family and team members at workplace develops a culture of affection, care and trust. Emotional modelling by managers gives examples to subordinates that this is how they should behave and work. Integrating emotions in company's mission, vision and values makes the culture emotionally positive and highly creative. Emotional intelligence-based recruitment, training and appraisals practically integrates emotional capabilities in the company's formal people acquisition and management policies. Investing on AI based apps to track emotions and re-enforce positive emotions, gamification etc are additional measures that companies can take to transit towards an inclusive emotional culture. In order to succeed, it is important that the entire team works together as a single entity. This is possible only when the emotions of all are identified, appreciated, fulfilled and re-enforced.

Globalised economy demands high mobility and sharing of resources. Human resources mobility, skilled migrant workers and increasing demographic as well as psychographic dividend is characterising today's labour, which should be taken into consideration in crafting HR policies. Emotions and feelings cannot be isolated from humans. Hence, it is wise to shift from mechanistic structures to decentralized and knowledge-based operational models (Adler, 2001; Cho & McLean, 2009) governed by positive emotions. It is crucial to recognise and appreciate each entity's emotions and feelings to harness their

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contributions to the maximum. Consequently, the role of talent forces has become critical with an increased drive towards participation in organizational decision making, striking involvement in strategic business operations, higher ownership quotient with strong psychological contract and demand for challenging work context that pays them with a sense of self-actualization and esteem (Burke & Ng, 2006). Another emerging challenge is virtual workforce and virtual organisations. How an emotional culture would cater to the leadership and inclusivity needs of a virtual organisation is still to be answered. This chapter is significant in realizing the importance of emotional culture, its components and its outcomes. Since many organisations are progressively recognising the importance of emotions and emotional culture in organisational productivity and ROI in longer term, the practices should be popularised and further researches should be conducted to know more.

CONCLUSION

Sustainability is an issue in the present context as globalisation has brought about intense competition and hardly any loyalty. Workforce demographics and psychographics are changing with the speed of advancement of technology. Organisational growth and development are constraint due to rising employee turnover and issues of employee commitment, psychological contract, competency development and performance. Sustainability of business depends upon business values, organisational culture and people management practices. Thus, meeting the emotional requirements of people of diverse backgrounds is critical to fostering the feeling of 'oneness' in the workplace. This chapter provides an exhaustive review on the available literature related to sustainability, inclusiveness, emotional culture, emotional intelligence (EI) and emotional labour (EL). Various management practices of how Indian organisations have been able to develop a culture of sustainability through positive emotional culture and inclusiveness has been discussed. Disruption in HR practices have been happening in many ways, some through the integration of technology, AI and bots and other through the integration of the science of emotions in managing people. The cases help in understanding how fostering inclusive emotional culture have enabled Indian organisations to sustainably develop and grow.

Clear communication channels, primal leadership, HR practices that recruit, train, allocate, utilise and retain the employees based on EI (emotional capabilities as per job and organisational requirements), and aligning emotions into the mission and vision are the ways through which positivity can be ensured in the working culture and systems. Business cases of Indian organisations have been described to explain how they brought about disruption in HR practices to manage a positive emotional culture and employee wellbeing. Well managed happy employees eventually yield higher returns on investment through the emotional connect, psychological contract and engagement they develop with the organisation. Based on focus interviews of HR managers of Indian multinational companies in three different industrial sectors, a model has been proposed called as Inclusive Emotional Culture Framework (IECF) that offers systematic guidelines to HR leaders for cultivating a powerful positive emotional culture for 'All' in a highly diversified polarised organisation. The flowline states the identification of inclusion goals, perceiving the emotions of employees, aligning required emotions with the organisational mission, vision, values (descriptively and prescriptively), defining clear emotional goals meant for all, communicating these goals to all and designing HR practices based on the emotion's goals. A continuous process of follow up and re-enforcing the emotions is significant for sustainable HRM in the organisation.

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KEY TERMS AND DEFINITION

Cognitive: It is a psychological process occurring in the brain that involves acquisition and understanding of knowledge, experience and senses from the stimuli received.

Culture: It is a set of shared values, beliefs, and behaviours that are practiced, learned, and shared by a group of people.

Emotion: It is a mental state associated with the nervous system brought on by neuro-chemical changes, associated with thoughts, feelings, behavioural responses, and a certain level of pleasure or displeasure.

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Emotional Culture: It is a set of shared affective values, feelings, emotions, artefacts, beliefs that are set as a norm and supposed to be followed by every person of a group.

Emotional Intelligence: It is the ability of a person to perceive, understand, regulate and manage one's own and others' emotions.

Inclusive: The degree to which each different individual is considered to be one entity of a group and included within a group.

Performance: It includes the actual output or results of an entity as measured against its intended outputs.

Retention: The process of retaining employees within the organisation and preventing them from leaving due to some or the other reasons.

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Chapter 21
An Empirical Study of the Indian IT Sector on Typologies of Workaholism as Predictors of HR Crisis

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ABSTRACT

Workaholism, in recent years, has become a regular behaviour pattern among professionals. While self-negligence is assumed as a hallmark of workaholism, empirical data in this case stands to be both narrow and paradoxical. Modern developments like high-speed data connections add more to this belief, as this makes it possible for employees who would like to work at any place and at any given point of time to work. Workaholism is found to affect several important domains of life. With regards to work domain, workaholics commonly seem to have poor associations with their peer/colleagues, most likely on the grounds that they often feel the need to control them and experience issues with delegating work. Given that the amount of time they invested in their work leaves little energy for them for other activities, also the social life outside work gets hampered. This chapter explores the relationship between workaholism, perceived work-related stress, different job conditions, and intensifying anxiety among IT professionals in Delhi/NCR.

INTRODUCTION

With the fast leap of technology innovation and competitiveness, the leisure and comfort among today's employees have also improved. A new 24/7 economy has freed the old work environment paradigm, as never before. As an aftermath, an interminable transformation in working pattern is evidently noticeable. With globalization and the pace of technology change in society, the modern economy organizations have become indeed exceptionally demanding. This also has augmented the need for growth, followed with frequent breakdowns among working employees.

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Number of studies (Estes & Wang, 2008; Hooks & Hicks, 2002) have shown that working conditions have changed expeditiously. Ambiguity of clear role expectations at work is high and the balance between work and personal being has become vaguer (Srikanth & Jomon, 2013). Stress rates at work have upsurge in the past decade resulting in psychiatric health problems and turning down of work productivity. It is also evident from numerous reports that a high level of perceived stress at work is related to low level of satisfaction with job and poor mental condition (Dhabhar, et al., 2010). Several researches have also reported significant associations between occupational stress, anger, work-family conflict and psychological and physical health. Henceforth, a great deal of attention is being given to the issues of work-related stress and health (Schaufeli, et al., 2008) which is often discussed in daily conversations.

Stress

Stress, over the years, has been defined in diverse ways. Formerly, it was regarded as some kind of pressure from the environment which later on turned into strain within the individual (Shimazu&Schaufeli, 2007). An extreme mode of stress can hinder productivity and impact one's physical and mental health. It can also threaten the individuals as well as organisations from attainment of goals. Mohanty & Jena (2016) has found in their investigation that job turn out to be less fulfilling under extreme stress and that their expected inherent and outward needs are not satisfied. Tomar (2017) found that IT professionals have long work hours with various time zones, add up to cooperation, undertaking to be finished on due date with flawlessness as per customer needs, which requires relational, specialized, and authoritative. These attributes prompt word related stress and work exhaustion.

How Is Stress Caused?

The workplace is an imperative cause for both demands of job and pressures triggering stress. The factors related to workplace stress cited are dearth of managerial support, low inter-personal relations, demanding job, workplace viciousness, lack of flexibility, low self-esteem and being workaholic (Schaufeli & Bakker, 2004), which further results in HR Crisis (Pandey & Sharma, 2014). HR crisis may be defined as an unstable state of affairs occurring in the organisation resulting in drain or loss of personnel, deterioration of morale, inadequate development of human resources, lack of succession plans and managerial inappropriateness leading to a multiple unhealthy consequence in an organisation.

Few researchers have tried establishing relatedness between personality types with stress proneness. One that includes being persistent and highly involved in work was studied by Caplan & Jones (1975). It acted as a catalyst of workload and ambiguity of role resulting further into anxiety, depression and antipathy. Role ambiguity was found to be positively associated with anxiety, depression, and antipathy, whereas workload was found to be positively associated with anxiety only. Research has further more revealed that these individuals who are mostly in a perpetual struggle mode to get things done in the least amount of time will undergo more stress than individuals who rarely have an urge to succeed. Adding to these personality types, there is another vital personality attribute that has come forth to make pace with the demand of the dynamic economy is "workaholism". This popular corporate buzz word has also created hype among scholars across the world. The emphasis of lately, has been on understanding the diverse aspects that constitute workaholism. For the non-professionals, "workaholism" appears to be working exceptionally hard. It's quite apparent that a person who is a typical work addict would be driven by a strong internal motivation rather than being driven by external aspects, such as organiza-

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tional culture, financial issues, pressure from supervisor or a strong yearning for career encroachment. The diverse notion of "workaholism" put forth a requisite to conceptualize the word "workaholism", as its inimitable outcomes and antecedents has emerged as broadly varied and contradictory. Based on the extant literature it is observed that stress, insecurity related to job and job/occupational burnout are the probable roots of career exodus for IT professionals. In several studies, it's depicted that when stress levels surpass the coping abilities of an individual, the results are unfavourable to the organization as the stress related to the employees has been majorly linked to career change intention. A common link found in different studies related to career exodus is that when employees work under lot of pressure which is common IT industry, they start changing careers in order to lessen stress. Based on such evidences, it is expected that overstressed IT professionals may follow suit and change careers (Rathore & Ahuja, 2015). Managers, thus, looking forward and are keen in retaining these IT talent, should work on implementing changes aimed at improving the work/life balance of the employees. Dealing with information technologies for 99% service uptime is very arduous, both physically and emotionally. In an informal interview conducted, it was indicated that this was a principal cause of burnout and stress. In many IT companies, employees are expected to be available on a 24/7 basis, in case of any technical issues. This requires leaving one's home and return to the office during non- working hours to execute backup service or technical maintenance. The most viable solution managers can provide to elude this job burnout is by expounding the boundary between work and home (Ghapanchi & Aurum, 2011).

REVIEW OF LITERATURE

Using Work Addiction Literature to Theorize About Basics of Workaholism

Oates' unique conceptualization of workaholism mirrored an immaculate enslavement point of view as far as both the impulse to work and the level of contention with one's life:

A workaholic is a man whose requirement for work has turned out to be excessive to the point that it makes observable unsettling influence or impedance with his real wellbeing, individual satisfaction, and relational relations, and with his smooth social working (Oates, 1971; p. 4).

Two exceedingly compelling models in our comprehension of behavioral addictions are the disorder model of habit (Shaffer et al., 2004) and the segment model of enslavement (Griffiths, 2011). Though the previous has been most useful in understanding forerunners and helplessness, the last gives a structure whereupon the key basic components of dependence can be caught on. The parts display draws on Brown's (1993) hedonic administration demonstrate and has been to a great extent enlivened by the symptomatic characterization of phobic behavior. As per this structure, a someone who is addicted presentations indications that speak to each of the accompanying segments: subjective and additionally behavioral remarkable quality (i.e., the action commands one's considerations as well as conduct), state of mind change (i.e., the conduct is utilized as an approach to alter inclination), resistance (i.e., the expanding measure of time required to acquire a similar involvement with the action), withdrawal side effects (i.e., feeling contrary feelings when the action is halted or decreased), backslide and restoration, and loss of control (i.e., the need to come back to a similar level of utilization in the wake of attempting

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to stop, and losing control over the utilization), and strife (i.e., the conduct clashes with everything in the individual's life, for example, connections, work, as well as training) (Griffiths, 2005).

Workaholism

The word "workaholism" has been interpreted from diverse standpoints viz. nature of work, working hours etc. Definitions (Buelens & Poelmans, 2004; Harpaz & Snir, 2003; Scott, Moore, &Miceli, 1997) say that workaholics spend more time on their work which leaves them psychologically or cognitively fatigued with passage of time. Moreover, they perpetually keep thinking about work when not even at work, ending up in relatively high level of emotional distress and physical complaints.

"Workaholism" and "workaholic" was first interpreted by Oates in 1971. He defined a "workaholic" as "somebody who is so obsessed with work that it creates conspicuous disturbance to health, personal happiness and social functioning". Several other researchers (Cherrington, 1980) have termed different workaholic types with both positive and negative connotations that are in nature both mixed and conflicting. Some researchers (Schaef and Fassel, 1988) with a broader understanding of the subject have quoted that organizational factor play a dominant role in development of Workaholism traits in employees as it is observed that organizations are keen in rewarding workaholics or workaholic behaviour. Employees putting in long hours at work, spending an extra time on job apart from normal office hours, are remunerated with acknowledgments and better career prospects. The fact also stands true for such organisations where extra working hours or workaholic behaviour are considered as a requisite for growth and innovation and are preferred by executives majorly over being or going back early at home (Dasgupta and Gupta, 2009).

Diverse Working Conditions and Work- Related Stress

Nevertheless, of a huge portion of research on individual types of employee's well-being, for example, burnout, work engagement, job satisfaction, furthermore, workaholism is very less thought about on how they may affect each other after some time. How employees feel at work may affect their conduct at work, and furthermore over the long haul (Vogt, et.al 2016).

For both hypothetical and handy reasons, it is imperative to know the potential outcomes of diverse sorts of employee well-being, and furthermore in examination with each other. Environment at workplace is one of the popping elements of external stress factors. In lieu of this, prior researches have revealed that excessive stress and anxiety at job, job dissatisfaction and high work-family conflict experienced by employees are mainly swayed by contextual components. Such toxic work environment can have catastrophic effects on its employees. It is also seen that workaholics put lot of effort in their work, are very stubborn, look for perfection in everything (not restricting it to job) and do not believe in task delegation that in turn creates a lose- lose situation between him and his co-workers. Former definitions have concerted on the frequent non- work consequences that go with workaholism. Robinson (2000) illustrated the individualities of workaholism as being similar to that of alcoholism, i.e. being progressive in nature, an unconscious attempt to resolve unmet psychological desires which can lead to irrepressible life, fragmentation of family, severe health complications and death too". An important facet of the overall concept is that workaholic behaviours are not driven by external needs rather it is internally based. Relatively to the three-segment approach by Maslach et al. (2001), others have contended that job burnout may best be lessened to an unsocial regular torment, to be specific exhaustion (Sinha, et.al, 2014).

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Conversely, the empathy weakness structure characterizes burnout as a unidimensional build including an absence of prosperity, negative demeanours toward work, or an absence of self-acknowledgment (Reddiyoor & Rajeswari, 2017).

Based on available literature and introspection on severe working conditions in today's organizations, the present study has made an appropriate effort in incorporating work conditions and working attitudes to explore the relationships between perceived or appraised work stress and anxiety among IT professionals in Delhi/NCR.

Demographic Variables and Work-Related Stress

Cox (2010), defined stress as a "perceptual phenomenon arising from a comparison between the levels of demand put on a person versus his ability to cope." The degree to which a stress is experienced by an individual in a particular situation will contrast due to personal factors. When talking on the demographic grounds, researches show that young workers are most likely to be less satisfied with their present jobs than older workers (Srivastava, 2011). Stress is an emotional state of fear and threat that has physical, mental and behavioural consequences. It is practically proved that people usually perform well when they are encouraged, challenged and invigorated rather than being threatened by facets of the work environment that are sometimes over arduous in some way. Gender difference similarly has one of the dynamic roles to play in understanding work-related stress and anxiety due to diverse demands rising from job. Men and women account diverse reactions to work-related stress, both physically and psychologically. Number of researchers put forward that though the probability in women reporting symptoms of clinical depression or anxiety disorder related to work-related stress is high, they are doing a better job in connecting and involving themselves with others which at times are imperative as stress management strategies (Shimazu, Schaufeli &Taris, 2010).When compared to men, 80 percent of them who had high psychological job demands were found to be at greater risk of depression and anxiety disorders than the one with lower demands. It was also observed that nearly half of the depression or anxiety disorder cases were diagnosed at age bracket of 30-35, which was directly related to workplace stress and high job demands condition.

Workaholism Phenomenon, Work Related Stress, Job Conditions: Internal Validity

The expression "workaholism" was begat by Oates (1971), who depicts it as "the impulse or the wild need to work unendingly" (p. 11). This early portrayal involves two center components which return in most later meanings of workaholism: working too much hard and the presence of a solid, compelling internal drive (cf. McMillan, O'Driscoll, and Burke, 2003). The previous focuses to the way that obsessive employees have a tendency to assign an excellent measure of time to work and that they work past what is sensibly anticipated that would meet hierarchical or financial prerequisites. The last perceives that compulsive employees relentlessly and every now and again consider work, notwithstanding when not working, which recommends that compulsive employees are "fixated" with their work. Truth be told, these two components—that speak to the behavioural and subjective part of workaholism, individually—allude to the very inception of the term workaholism which was intended to compare to liquor addiction. We concur with Porter (1996, p. 71), who approaches understudies of workaholism to "… come back to the root of the term as a beginning stage for future research". She places that workaholism

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ought to be translated as a habit, that is, as intemperate and industrious conduct with unsafe outcomes, along these lines barring sees that think about workaholism as a positive state (e.g. Machlowitz, 1980; Scott, Moore, and Miceli, 1997; Spence and Robbins, 1992). In our view, compulsive employees work harder than their employment medicines require and they put substantially more exertion into their occupations than is normal by the general population with whom or for whom they work, and in doing as such they disregard their life outside their occupation. Ordinarily, they work so hard out of an internal impulse, need, or drive, and not in light of outer factors, for example, budgetary prizes, profession points of view, hierarchical culture, or poor marriage.

Work related stress or burnout is an analogy that is usually used to depict a condition of mental exhaustion. In spite of the fact that there is some discourse about the idea of burnout, the most broadly utilized conceptualization begins from Maslach (1993), who depicts work related stress as a three dimensional develop that comprises of: (1) depletion (i.e. the exhaustion or depleting of mental assets); (2) skepticism (i.e. apathy or a removed state of mind towards one's employment); and (3) absence of expert viability (i.e. the propensity to assess one's work execution adversely, bringing about sentiments of deficiency and poor occupation related confidence). It has been assessed that more than 90 for every penny of the examinations on work related burnout utilize the Maslach Burnout Inventory that depends on this three-dimensional definition (Schaufeli and Enzmann, 1998, p. 71). The way that reviews on burnout and workaholism are for all intents and purposes lacking is all the more surprising on the grounds that as of now 20 years prior it was proposed that workaholism may go about as the underlying driver of burnout since unreasonably and quickly working representatives go through their mental assets, abandoning them exhausted and "wore out" (Maslach, 1986). Plainly, this dispute suggests that workaholism and job burnout are distinctive constructs that can likewise be separated observationally.

The idea of job conditions evolved from researches on job burnout, to be specific as an endeavour to cover the whole range running from employee unwell being to representative prosperity. Not at all like the individuals who experience the ill effects of burnout in job, drew in representatives have a feeling of vivacious and powerful association with their work exercises and they consider themselves to be ready to bargain well with the requests of their employment. All the more particularly, Schaufeli, Salanova, González-Romá, and Bakker (2002a) characterize work engagement as a positive, satisfying, work-related perspective that is portrayed by: (1) energy (i.e. elevated amounts of vitality and mental strength while working, the eagerness to put exertion in one's work, and determination additionally even with challenges); (2) commitment (i.e. a feeling of criticalness, eagerness, motivation, pride, and test); and (3) retention (i.e. being completely moved and fascinated in one's work, whereby time passes rapidly and one experiences issues with withdrawing oneself from work). Job conditions and job burnout are reasonably adversely related. As of late, it was discovered that fatigue and energy and additionally negativity and devotion each traverse a measurement that may be marked activation and distinguishing proof, individually (González-Romá, Schaufeli, Bakker, and Lloret, 2006). Up until this point, the connection between job conditions and workaholism has not been considered. Be that as it may, interviews with drew in representatives who scored high on energy, commitment, and assimilation recommend that they are not dependent on work (Hallberg, U. & Schaufeli, W.B., 2006). Dissimilar to workaholics, they appreciate getting things done outside work, they don't feel regretful when not working, and they don't work hard due to a solid and powerful internal drive but since for them work is entertaining.

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CONSEQUENCES

Workaholism can adversely impact private relations, recreation and wellbeing (Grzywacz, J.G. & Marks, N.F., 2000). The side effects are like what we see in different addictions, including impacts on temperament, resistance and withdrawal. Studies demonstrate that when one encounters stress at work, people with a solid interior work drive report an expansion in subjective stress-related physical and mental manifestations contrasted with those with low scores (Linley, P.A., Joseph, S., Harrington, S. & Wood, A. 2006; Taris, Schaufeli &Verhoeven, 2005). In this way, it is conceivable that adapting style controls the connection amongst workaholism and wellbeing (Shimazu, Schaufeli &Taris, 2010).

Two examinations have looked facilitate into how workaholism identifies with rest. In one investigation, people with the most elevated scores on workaholism were more probable than laborers with low scores to report rest issues, tiredness at work, and challenges awakening notwithstanding exhaustion in the mornings (Kożusznik, M.W., Dyląg, A., & Jaworek, M.A., 2014). In the other investigation, Andreassen et al. (2011) found that high fanatical work drive was related with a sleeping disorder.

Moreover, investigate demonstrates that compulsive workers report all the more work–family clashes and poorer working outside work than non-obsessive workers (Ho, V.T., Wong, S.S., & Lee, C.H., 2011; Robinson, B.E., 1999). Since time is a restricted asset, it is regular that workaholism affects the household front. Barely any investigations, be that as it may, have been directed with a nearer examination of how workaholism influences the work–family relationship. In a current report that separates amongst positive and negative overflow it was discovered that fanatical work drive was connected to negative overflow amongst work and family (Andreassen, Hetland et al., 2012). Much more, the observations also state that workaholics are slanted to contribute their assets (e.g., time, vitality, consideration, feelings) in work, and paying little heed to whether they fall flat or succeed, will keep on doing in this way, frequently to the detriment of their private and family lives. (Hakanen & Peeters, 2015).

Taken together, it appears that the centre component of workaholism, inside over the top work drive, is related with a few negative side effects (Grant, J. E., et al., 2010; John, O. P., Naumann, L. P. & Soto, C. J., 2008; McMillan LHW, et al., 2001). Work drive has likewise been connected to bring down life and employment fulfillment. Furthermore, it has been exhibited that workaholism is related with diminished mental prosperity, saw wellbeing, joy and self-detailed work execution ((Taris, T.W., Schaufeli, W.B., Shimazu, A., 2010; Shimazu & Schaufeli, 2009).

Motivation of the Paper

In line with the aforementioned research and on the basis of prevailing literature on the concept of "workhaholism", the present study aims at exploring the relationship between anxiety and work-related stress among IT professionals in Delhi/NCR in context with the rampant working culture and workaholism. The study also emphases on the data with reverence to particular industry i.e. IT industry and demographical variables.

The Pertaining Issues in the Study

Firstly, the innumerable underlying scope of workaholism, working culture and job conditions that may impact the multifarious dimensions of work-related stress and anxiety as observed in IT professionals still provides a window for exploration. Secondly, whether the notion of work-related stress and anxiety

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differs in IT professionals based on age group and marital status, or for the reason that they are working in different industries needs to be addressed.

To attain the basic objective of the study, it's important to have a comprehensive view of:

1. The level of association among the factors of workaholism, work culture and job conditions with anxiety (of growing age) and a person's physical appeal
2. The level of association among the factors of workaholism, work culture and job conditions with anxiety at work and unreasonable distress
3. The level of association among the factors of workaholism, work culture and job conditions with health issues
4. The difference in values of work-related stress and anxiety pertaining to certain demographic variables

RESEARCH METHODOLOGY

Aforementioned issues were raised and examined using multivariate background. The sampling technique used was purposive in nature, as the focus was on particular characteristics of a population which would best enable us to answer our research questions. For this, IT professionals belonging to middle and upper level of hierarchy across different IT companies in Delhi/NCR were contacted. The age group of respondents varied from 30 years to 50 years. All participants were informed about the objective of the study. Data and responses were collected through a structured questionnaire which was mailed across to the professionals. Though initially 250 respondents were approached the final sample size came about to be 200 only. The questionnaire constructed was subjected to factor analysis with oblique rotation to identify underlying constructs or factors. This would further help in explaining the correlations among a set of items.

Measures

The questionnaire included the following four aspects- workaholism, work culture, job conditions and work-related stress &anxiety. All measures were well validated. Each measure used was rated on a 5-point Likert scale (1= do not agree, 5= absolutely agree).

- **Workaholism:** The scale consists of five subscales (a) Obsession for work, (b) Self-sufficiency with no socialization, (c) Exhaustion from work (d) Timeliness (e) Recognition. The alpha coefficient of the scale results in .880.
- **Work Culture:** The scale consists of two subscales (a) Rewarding long working hours and competitive work culture, (b) Fast Growth and organisational culture of competition. The alpha coefficient of the scale results in .760.
- **Job Conditions:** The scale consists of four subscales (a) Disproportionate Job Responsibilities, (b) Unforeseen work (c) Work pressure with no substitute, (d) Travelling. The alpha coefficients of the scale results in .696.

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- **Work-Related Stress and Anxiety:** The scale consists of three subscales (a) Anxiety due to growing age (b) Anxiety due to work evolvement, (c) Health issues. The alpha coefficients of the scale results in .848.

Demographic features of the respondents included age, gender, years of service and marital status as mentioned in Table 1.

Table 1. Demographic information

S. No.	Demographic Characteristics	Number
1	Average age of the respondents	36
2	Percentage of respondents (male)	88
3	Percentage of respondents (female)	12
4	Average working hours (per week)	64
5	Hierarchy in the company - Middle Management (%)	60
6	Hierarchy in the company - Senior Management (%)	40
7	Married (%)	80
8	Unmarried (%)	10
9	Divorced (%)	10

RESULTS AND ANALYSIS

To explore the associations between fundamental dimensions of workaholism, Work Culture and job conditions with the multifarious dimensions of work-related stress and anxiety observed in IT professionals, certain research questions were constructed that were further analysed through step-wise multiple regression analyses. The independent variables were (a) Factors of Workaholism, (b) Work Culture and (c) Job Conditions. The dependent variable was (a) Work-related stress and anxiety.

Correlation Results

Correlation Analysis which is applied to quantify the association between two continuous variables was run on the data collected as shown in Table 2. The means, standard deviations, and correlation coefficients resulted in factors of Workaholism showing significant positive correlations with factors of work culture and the factors of dependent variable work-related stress and anxiety (with low values). Work culture is significantly correlated to work-related stress and anxiety (though the value of the coefficients is low). Factors of severe job conditions show both positive and negative correlations with work-related stress and anxiety.

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Table 2. Means, standard deviations, and correlation analysis

Variables	Obsession for work	Self-sufficiency with no socialization	Exhaustion from work	Timeliness	Recognition	Rewarding long working hours & promoting competitive WC	Organizational culture of competition	Disproportionate job responsibilities	Unforeseen load of work	Work pressure with no substitute	Travelling	Anxiety due to growing age	Anxiety due to work environment	Health issues
Obsession for work	1													
Self-sufficiency with no socialization	.396	1												
Exhaustion from work	.312**	.442**	1											
Timeliness	.218**	.189*	.210**	1										
Recognition	.204*	.251**	.009	.211**	1									
Rewarding long working hours & promoting competitive WC	.315**	.051	.054	.101	.342**	1								
Organizational culture of competition	.082	-.031	.007	.113	.392**	.282**	1							
Disproportionate job responsibilities	.348**	.346**	.381	.146	.171*	.239**	.169*	1						
Unforeseen load of work	.271**	.061	.139	.331**	.252**	.425**	.136	.116	1					
Work pressure with no substitute	.481**	.401**	.291**	.354**	.221**	.336**	.124	.372**	.273**	1				
Travelling	-.041	-.082	.031	-.029	-.124	-.114	-.142	-.084	.006	-.044	1			
Anxiety due to growing age	.361**	.134	.351**	.091	.011	.161*	.174*	.079	-.025	.211**	-.049	1		
Anxiety due to work environment	.365**	.310**	.271**	-.021	.142	.182*	-.072	.147	.087	.159*	-.117	.396*	1	
Health issues	.521**	.151	.191*	.216**	.131	.106	-.027	.032	.139	.359**	-.291**	.481**	.250**	1
Mean	8.74	14.28	6.13	12.58	12.11	11.78	7.68	12.73	5.76	9.16	54.84	7.45	8.67	3.9
SD	2.48	4.45	1.95	2.19	2.06	3.05	1.59	3.42	2.25	2.31	15.25	3.35	3.38	2.1
Sig	**p<.000 *p<.05													

Regression Analysis

In the next step, we conducted an additional analysis, Stepwise regression Analysis to see the pattern of associations among the factors of workaholism, work culture and job conditions with the factor of dependent variable i.e., anxiety (with the growing age) and a person's physical appeal. Stepwise regression adds or removes variables based on the t-statistics of their estimated coefficients. Table 3 depicts the variables that resulted as significant predictors of dependent variable.

With the first regression analysis, the variables that came out as the significant predictors for Work-related stress and anxiety are - Obsession for work, Exhaustion from work, Promoting competitive work culture, Disproportionate job responsibilities and Unforeseen load of work. The variables shared 28% variance with criterion variable 'Work related stress & anxiety.' The result depicts that the factors of Workaholism among the independent variables are the stronger predictors of work-related stress and anxiety than the factors of work culture and job conditions. The beta weights of the two significant predictors of Workaholism are .356 and .351, followed by work culture and job conditions. With negative beta weights (-.178 and -.184) of factors of job conditions it illustrates that there exists an opposite relationship between extreme job conditions and anxiety due to growing age and a person's physical appeal.

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Table 3. Stepwise regression-anxiety at work and unreasonable distress as dependent variable and factors of workaholism, work culture and job condition as independent variables

Variables	Standardized Coefficients		
	Beta	**T**	**Sig**
Obsession for work	.356	3.917	.000
Exhaustion from work	.351	4.283	.000
Promoting competitive work culture	.213	2.738	.006
Disproportionate job responsibilities	-.178	-2.398	.014
Unforeseen load of work	-.184	-2.275	.021
R2	.284		
F	9.879		

The second intent of the research was to analyse the level of association among the factors of workaholism, work culture and job conditions with the dependent variable, anxiety at work and unreasonable distress. Another multiple regression was run to get the result. Table 4 illustrates that only two factors of workaholism emerged as the predictor of anxiety at work and unreasonable distress amongst all the independent variables. Further, obsession for work came out as a stronger predictor with beta as .289than self-sufficiency with no socialization with beta value being.184. R^2 is .191that shows the variance shared by both the variables is 19%.

Table 4. Stepwise regression-anxiety (with the growing age) and person's physical appeal as dependent variable and factors of workaholism, work culture and job condition as independent variables

Variables	Standardized Coefficients		
	Beta	**T**	**Sig**
Obsession for work	.289	3.508	.001
Self-sufficiency with no socialization	.184	2.279	.023
R2	.191		
F	14.178		

To have a comprehensive view of the strength of association between the factors of workaholism, work culture and job conditions with the dependent variable, health issues stepwise MRA was run on the data available. Obsession for work having the highest beta value (.511) emerged as strong predictors for dependent variable "health issue" followed by the factors of job conditions. Yet again, the factors of job condition "Travelling and Disproportionate Job Responsibilities" emerged as negative predictors of 'work-related stress and health issues.' Another job condition dimension - Unforeseen work demand has emerged as the positive predictor for DV 'health issues'. All the independent variables showed 45% (R^2=.451) variance with the dependent variable- Table 5.

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Table 5. Stepwise regression: Work-related stress and health issues as dependent variable and factors of workaholism, work culture and job condition as independent variables

Variables	Standardized Coefficients		
	Beta	T	Sig
Obsession for work	.511	6.712	.000
Travelling	-.287	-4.451	.000
Disproportionate Job Responsibilities	-.234	-3.419	.001
Unforeseen work demand	.189	2.511	.012
R^2	.451		
F	26.032		

T-Test Results

To have an understanding of the difference in values of work-related stress and anxiety pertaining to certain demographic variables T-test was applied on the data. Table 6 shows the t-test result in terms of marital status of the employees which reveals a significant difference in terms of perception of work-related stress. Work-related stress and anxiety was seen to be significantly higher among unmarried IT professionals compared to married IT professionals. Further, a dichotomous split of employees in the age group between 24 and 35 and 36 to 55 years was done to find the difference in terms of age group. This split was made on the basis of meta-analyses of age in the applied psychology literature (Thomas & Feldman, 2009). The result showed that work-related stress among employees belonging to 24 years to 35years was significantly high as compared to 36 years to 55 years' age group.

Table 6. Comparison of marital status and age group of employees on work-related stress and anxiety

	Marital Status		Age Group	
Variables	Married (N=170)	Unmarried (N=30)	24-35 yrs. (N=90)	36-55 years (N=110)
Work-related stress & Anxiety	M=23.12 S.D.=8.56	M=25.52 S.D.=9.72	M=25.87 S.D.=8.97	M=23.74 S.D.=7.65
T value	-4.954 P<.000		2.45 P<.023	

DISCUSSION

It is important to know the sampling technique used in the study as it makes the findings understand better. This study is based upon purposive sampling, wherein a researcher chooses to what is to be known and then selects the sample that can provide the exact information by his experience or knowledge (Tongco, 2007). As the objective of the research was in studying IT professionals who work in extreme job environments in Delhi/NCR, purposive sampling was the ostensive choice.

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The study provides a perspective wherein workaholism with a definite work-culture and job conditions takes a toll on IT professionals. It entails the workaholic behaviour pattern that cropped up as (a) Obsession for work, (b) Self-sufficiency with no socialization (c) Exhaustion from work (d) Timeliness (e) Recognition is associated to work-related stress and anxiety among IT professionals. Simultaneously, the work-related stress and anxiety scale emerged with three major elements (a) Anxiety due to growing age (b) Anxiety due to work evolvement, (c) Health issues. The result demonstrates that high obsession towards work if reaches an exhaustion level, has the tendency to influence the perception of anxiety about approaching old age or growing age. Even the factor of work culture of the organization i.e. fast growth and organisational culture of competition has its say on increasing anxiety due to growing age and drooping personal looks. If we put together, the second and third regression addressing the workaholic behaviour representing obsession for work, self-sufficiency and no socialization, included with the type of work that leaves a person with mental and physical exhaustion is yet again linked to work-related stress and anxiety among IT professionals. There is a difference in working hard and being addictive towards work and it becomes all the more unlike when signs comprise of being negligent of personal activities, austere conditions of health and excessive qualms for future prospects. Researchers have found that excess of workaholism has negative impact on a person's health leading to too much work stress and job burnout (Chen, Chang & Ching, 2004).

The preceding academic literature shows that workaholic behaviour pattern along with prevailing work culture in the organization have been influencing the stress perceived by IT professionals. Organizations generally set standards for working hence stimulating a work culture wherein the philosophy revolves round rigorous competition thereby takes its toll on employees. The big run today is to be on the top which has become vicious as the positions vacant are now limited than what used to be a decade and a half formerly (Joseph, Gautam & Bharathi, 2015). To stay ahead and competitive, organizations are promoting a culture of hard work and encouraging employees to go that extra mile. Though academic literature is full of evidences (Vansteenkiste et al., 2007) about the negative impact that competitive work culture has on both physical and mental health, one staggering finding has emerged in this study as well. The study resulted in two factors of job dimensions being negative predictor of a particular type of work-related stress (anxiety due to growing age and changing looks). This explains that extreme working conditions in corporate world, disproportionate job responsibilities and unforeseen work do not affect IT professionals with regard to anxiety due to growing age and changing physical looks. People also take travelling with ease (for work) till they do not find it distressing their overall health. Employees especially from service sectors work for long hours and with the augmented usage of highly developed technology it requires one to be available 24*7 even after duty hours. In lieu of this, other studies too have ascertained that although these jobs have high rewarding structures but employees with such demanding jobs are more susceptible to job burnout.

The Dangerous Allure of Extremes

Some findings that stand contrary to considering extreme job conditions as negative are depicting a change in the social phenomenon of perception of work-related stress. Working for more than 60 hours a week has become a typical norm. Employees take pride and feel exalted in working late in the office and are happy in extended travel for office work. The reasons probably could be being highly achievement oriented; believing in the philosophy of being "extreme" and being under competitive pressure (Shahnaz, Zickar & Michael 2006). Though competitive pressures in corporate world are making "extreme" jobs

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necessary, there has been an upsurge in regard of activities that increases the adrenaline produced in high-stress situations. Second motivating element found stimulating workaholism was the allure of the job. A culture that promotes "extremes" is not surprising as employees strongly endeavour for such passionate jobs. They do not consider these jobs as exploiting them rather they consider these jobs as honourable, appropriate and much wanted. It's surprising that the drift heading extreme is been considered as an advantage to competitiveness. The organization to some extent by trending towards extreme might gain competitive advantage but then putting excess stress on job would crop a contrary effect too.

The study shows that employees in IT sector have comparatively a higher level of work- related stress and anxiety compared to other sector (Bolhari, Rezaeian et.al 2012).The reason perhaps could be the major push been faced by the service sector in Indian that is high compared to other sectors. Studies previously have shown that IT professionals often agonize from job burnout due to extremely arduous and hectic job conditions (Sonnentag, S. et al, 1994). Marital status and age level as key factors correspondingly make a difference while perceiving stress and anxiety level. The possibility maybe at the earlier stages of career, expectations and desires being high, individuals do not get easily satisfied. Hence, unmarried and younger age group employees go through more stress and anxiety from work compared to married employees. Research shows that being married conveys support and firmness to personal lives of employees with older adults also being able to regulate their temperaments and exhibit an advanced level of emotional intelligence (Goodman, 2011).

Workaholism: Nature, Sources, and Outcomes in the Global World

Workaholism involves (a) disproportionate spending of time and energy on work (b) difficulty in disengagement from work, eliciting negative emotions (c) obstruction and anxiety (d) restricting oneself from socialization (e) leading to low self-esteem, career dissatisfaction, ill-health and job burnout. This has been further described in form of typologies in Table 7. A workplace that puts forth excess work pressure especially business services is found to be moderately related with higher level of drive for work and low level of work enjoyment. On the contrary, a system with supervisors providing flexibility at work is related with relatively less work-family conflict and more job satisfaction among enthusiastic workaholics. Findings have revealed that regardless of gender, work-related stress and work-life conflict or imbalance is correlated with workaholism (Kumar & Siddique, 2011) which meant that gender did not moderate the associations between workaholism with work-related stress and work-life conflict.

The following conclusion of the researches has persisted to be constant across nations, i.e. respondents with a high level of work-orientation worked comparatively more number of hours per week than respondents with low level of work-orientation. The working hours for men stands out to be more per week than for women. Married women spent comparatively fewer hours per week on work than unmarried women, however married men's working hours were than unmarried men per week. Employees of private sector tend to spend more time on work per week than employees from public-sector. It is also observed that employees in the IT sector, particularly women don't remain with a similar association for a long time because of prolonged working hours/odd planning (Patwardhan, 2014). Subsequently, keeping in mind the end goal to maintain a strategic distance from the strain emerging because of tedium, rebuilding of occupations should be possible to suit the people's attitudes and interests by giving some sort of incitement, by limiting distressing perspectives a presenting development arranged settings, enabling representatives to have control over the occupation and accept choices on the position with confined authority.

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CONCLUSION

Even though the word "workaholism" has turned into a piece of our ordinary vocabulary, regardless we know minimal about the logical reason for it. Reasons why a few people move toward becoming obsessive workers are most likely various and complex. For the most part, studies demonstrate that workaholism is likened with negative results. To date, no recorded handling mechanism for workaholism exists. The field is in extraordinary need of longitudinal examinations including target parameters of conduct and wellbeing.

The present study aimed to examine the relationship of workaholism with work related stress, work culture and job conditions amongst IT professionals in Delhi/NCR. The results of the current study indicated that workaholism and its components were significantly and positively related to IT professionals' work-related stress. The results of stepwise multiple regressions demonstrated that workaholism could envisage IT professionals' stress towards work. These findings were in line with the results of Kumari, Joshi, & Pandey (2014), Haq (2015). To substantiate these discoveries, it could be noticed that workaholism forced an incredible pressure on employees, the outcome of which was work related anxiety and as the aftereffect of work related anxiety, the individual's physical and mental vitality masticated. This further led to strain, weariness, and burnout and diminished employment fulfillment. IT professionals had various undertakings and because of high workload and a wide assortment of obligations they had, they bear an abnormal state of working pressure. Obsessive worker IT professionals invest a large portion of their opportunity and vitality at work and oblige little time to their life and different issues. Truth be told, these individuals disregarded their need to rest and overlooked different issues identified with their day by day life which may prompt occurrence of some negative feelings affecting one's conduct and development.

Other findings of the current study indicate that workaholism and it components were significantly and positively correlated with IT professionals' work related stress, work culture and job conditions. To justify these outcomes, it can be noticed that workaholics oppose on attempting to enhance themselves and to wind up plainly fulfilled and they look for satisfaction and delight in their work. These individuals have solid inborn inspiration to work, against which they can't help it. This autonomous inspiration may be because of ecological conditions including monetary situations, environment of the organization, pressure caused by one's manager, work advancement and additionally getting away from the family. These individuals invest a little energy to rest and after some time, they end up noticeably depleted cognitively and inwardly. Since they largely are involved in work, notwithstanding when they are not at work, they encounter thoughtful excitement and turn out to be candidly exasperates and accordingly, they for the most part report different mental issue and physical objections. At the point when a man experiences burnout, he/she is for all time worn out, forceful, skeptical, and irate. He/she has negative musings and is irritable and exhausted. He/she ends up noticeably irate with the smallest uneasiness, and is disappointed and feels misery. IT professionals who are anxious to invest a great deal of energy at work enter their work lives into their own lives unintendedly and more often than not misfortune the harmony between their work lives and individual lives. Because of this extreme weariness which is caused to the idea of educating, IT professionals are confronted with burnout manifestations including lessened viability, exhaustion, and investing a great deal of energy at work. Accordingly, obsessive worker IT professionals end up plainly depleted speedier and this thus, may influence the quality of their administration and may prompt disappointment from work. Workaholism is a sort of enslavement

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which can be charming and in the meantime monotonous and risky to such an extent that a few scientists considered this state as an illness.

In the interim, since workaholics are not willing to delegate their oomph and obligations, they are in struggle with their colleagues and subsequently, their work turns out to be considerably more confounded. At the point when workaholics invest a considerable measure of time in doing their work, their vitality is debilitated and they experience the ill effects of work related stress. In an investigation, Jansi & Anbazhagan (2017) showed that individuals who are associated with their work are more inclined to mental and physical injuries contrasted with others, since they dedicate a ton of mental vitality and time to their work. This implies they disregard their own issues and invest the greater part of their energy at work. Subsequently, the more the force of the work and the more the occupation's requests, the more the employees' exhaustion.

Overall, results showed that with increasing IT professionals' workaholism, they experience more work-related stress and job burnout. Considering the results of the current study, holding training courses for IT professionals to become familiar with the phenomena of workaholism, stress, job burnout, individual and organizational outcomes, methods of dealing with them and managing time effectively (aiding at devoting time to work, family and oneself) is of great importance. It is recommended that other researchers conduct studies to investigate other sectors and also examine the relationship of workaholism with other occupational consequences based on demographic characteristics (gender, age, marital status, level of education, etc.). These studies can be conducted using a qualitative method or both qualitative and quantitative methods. Moreover, since the questionnaires used in this study were developed in other countries, developing such questionnaires in accordance with the condition of our country is highly recommended. Since this study was carried out on IT sector in Delhi/NCR, hence, generalizing its results has its own limitations. Therefore, when generalizing these results to other group of employees and sectors, great caution should be taken.

Inferences of the Study

The outcome of this exploratory study offers some interesting understandings of the variables that shares employees' perception of work-related stress and thereby suggests prospects for future research. The sampling technique was purposive and was drawn from IT companies located in Delhi/NCR, as Delhi/NCR being a metropolitan city and remarkably attracts people from all part of the world. The sample drawn had their work experience not only in Delhi/NCR but also in various parts of Indian cities as well as world. Thus, the findings of the study are supposed not to be just constrained to IT professionals working in Delhi/NCR but also to other employees working under related conditions. Though the concern towards increasing work-life imbalance has been taken up widely by Indian researchers, there still lies a gap in the empirical research concerning workaholism and its influence on Indian IT industry for a competitive business environment. Also, there is a large gamut of literature related to "workhalism" but it remains varied and conflicting till date. Therefore, there is a dire need to comprehend the phenomena of Workaholism and address the attributes of workaholism in depth. Considering Work-related Stress, Job Conditions and Work culture as main predictors of HR Crisis, with increase in work-related stress HR crisis in the organisation increases which means the predictor is positively related to HR crisis and with increase in job conditions and work culture (i.e. improvement in both the predictors) decreases the probability of occurrence of HR crisis which means the predictor is negatively related to HR crisis. Future research may also try and understand the mindset of the current generation with their choice of job and

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that what kind of training strategies companies follow to cope up with different types of job stress, if any. Studies, by and large, related to attributes of workaholism holds paucity of data in Indian IT context, which further drove the researchers to deep dive and understand the association between workaholism, job conditions, work culture and work-related stress and anxiety. It is generally observed that employees from IT & ITES sector seem to tussle with work-related stress and anxiety comparatively more; thus, organizations predominantly from this sector need to assess their nature of job and the prevalent work culture. Organisations should give an extra effort in development of skills at individual level, to cope with work-related stress and reducing depression and anxiety levels.

CONTRIBUTION OF THE STUDY AND DIRECTIONS FOR FUTURE RESEARCH

Workaholism, being a derogatory term, much of the literature has covered only the external effects of workaholism which therefore calls for further consideration. This study further summarizes its contribution in (a) categorizing the essential dimensions of workaholism, work culture and job conditions (b) determining the association among predictors and outcome variables. (c) Interpreting the difference in work-related stress and anxiety of IT professionals with respect to their age group and marital status. Present study is valued for its uniqueness in examining an imperative occurrence in the context of contemporary realities catering to Indian IT context specifically. The IT sector is frequently pigeonholed with high role stress (Karad, 2010), as the life expectancy of software products and programs keep waning each year, and the stress on employees keeps intensifying due to distinctive environmental pressures (Colomo-Palacios et al., 2014a). The irony is that it is rarely seen that the organizational culture helps employees in dealing with such stresses and its related problems. Research by Colomo-Palacios et al. (2014b) shows that stress also leads to IT career abandonment as the IT industry is more susceptible to prodigious and increasingly prompt changes. In such a scenario, the employees are thus expected to develop skills to learn fast, stay updated to new things, develop skills to work in team and problem solving and reasoning skill. This research thus, endeavours to recognize the working conditions and Workaholism behaviour along with the varying social milieu. Though there are quite a few limitations of this study but this can open a pathway for other researchers to explore other related factors in continuation to the present research. The results generalization as is restricted due to purposive sampling should therefore be treated with cautiousness. This study lost out on a substantial part of the working professionals as it did not include IT population belonging to the lower hierarchy of the organisational chart. Since this research was purely based upon the authors' own observation, it therefore proposes future scope of substantiating the data across industry or sector and including other population sample to the research (family, friends and associates). Generalization of the present study results to other sectors or industries as well as in other countries awaits further empirical examination.

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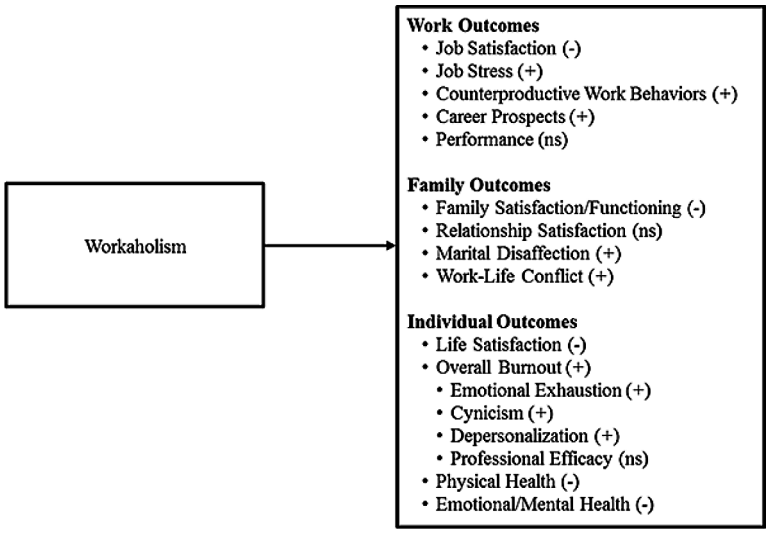
APPENDIX

Figure 1. Typologies of workaholism



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Chapter 22
CSR and PSR Diversity Engagement Among Ethnic Minority Businesses (EMBs) Within the UK

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University of Plymouth, UK

ABSTRACT

This chapter attempts to comprehend the complexity, nuances, and inherent challenges that exist amongst corporate social responsibility (CSR) and purchasing social responsibility (PSR) in the public and private sectors, within the context of ethnic minority businesses (EMBs) in the UK. As noted by Carter and Jennings and the Institute of Supply Chain Management, there is now a need to discuss ethnic minority businesses in the same context as human rights as there are such inequalities in both fields.

INTRODUCTION

This Chapter will address the challenges posed by corporate social responsibility (CSR) and purchasing social responsibility (PSR) amongst corporate organisations within the UK, contextualised among the ethnic minority business (EMB) community.This continues to be a topic for debate with an increasing emphasis on the need for further research to deal with the broader economic, social and ethical implications of business practice (Gereffi & Lee, 2012). New (1997) contends that researchers have a duty to take a wider view, as it will have greater social, economic and ethical ramifications, and that it is therefore imperative and incumbent upon researchers to adopt a broad standpoint when addressing this subject area. Smallbone (2005: p.432) describes EMBs based upon whether the businesses' ethnic minority (EM) owners are 'different' from the rest of the small business (SME) community in terms of their behavioural characteristics and in relation to the type of problems that they encounter.

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This conceptual Chapter presents an exploration of the critical issue relating to diversity and supply chain engagement within corporate organisations, which will bring this debate into sharp focus. The Chapter begins with an overview of the construct of Corporate social responsibility (CSR) and Purchasing social responsibility (PSR) within the supply chain. It then proceeds to examine the discourse relating to diversity engagement within EMBs in the UK and to understand what makes this issue different from other SMEs and potentially more problematic than other aspects of CSR.

At the start of 2015, there were 5.4 million businesses in the UK, and 99 per cent of them were categorised as SMEs (National Audit Office, 2016). The clear majority of these were identified as micro-businesses, employing fewer than ten people. The Office for National Statistics estimates that SMEs create around £35 of gross value added to the UK economy for every £100 of turnover, while larger companies create around £24. The European Commission defines an SME as an entity engaged in economic activity that:

1. Employs fewer than 250 people;
2. Has an annual turnover less than or equal to 50 million euros (£39 million);
3. Has a balance sheet total of less than or equal to 43 million euros (£33 million)?

A recent Minority Supplier Development UK report (MSDUK, 2017) indicated that there were over 300,000 ethnic minority-owned businesses in the UK, representing over seven per cent of the total of SMEs within the UK economy. EMB businesses within the UK operate in an eclectic mix of different business sectors and they have been urged to diversify from unfavourable 'low value' niche markets and businesses (Ram & Jones, 1998), to gain greater engagement within the public and private sectors. However, despite the size of this business community a disparity still exists between CSR objectives, PSR performance outcomes and the degree of engagement within the EMB community.

There is still an under-representation in both public and private sector supply chains of EMB engagement. This not only encumbers the wide-ranging PSR supply chain but also inhibits businesses from developing organic economic growth. However, it also deprives purchasing organisations of an alternative supply chain option that may bring new, creative and agile commercial solutions (MSDUK, 2017). This position is consistent with Carter and Jennings (2002) and the Institute of Supply Chain Management who have postulated that there is a need to discuss black minority enterprises in the same context as human rights, because of the inherent inequalities that exist in both (Carter & Jennings, 2004),

The Road to Procurement Report, published by MSDUK (2014), noted that the perception of unequal treatment has continued to infiltrate many organisations, resulting in a reluctance of EMBs to tender for large contracts. This may be on the grounds of size discrimination with assumptions that EMBs are not capable of delivering large contracts. The MSDUK (2012) Impact Assessment found that 36 per cent of corporate members expected EMBs to be slightly behind the standards of their existing suppliers in their ability to deliver large contracts and in the industries, that are represented by the ongoing supply chain.

This assertion is in contrast with Alsop's (2002: p.81) observation which contends that socially responsible behaviour can lead to greater customer loyalty and increased revenues. A survey by the Reputation Institute of over 21,000 consumers suggests that 'almost unanimously, the public assert that they require information about a company's record on social and environmental responsibility to help decide which companies to buy from, invest in, and work for'. This position is consistent with Katz (2011) who maintains that manufacturers who have implemented supplier diversity programmes contend that the

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payoff has come in the form of stronger relationships with their supply base, new business opportunities, and a more agile supply chain.

The UK government Department for Communities and Local Government (DCLG, 2013) suggests that there are an extraordinary appetite and aspirations for start-up businesses amongst ethnic minority groups within the UK, most notably amongst Black African (35 per cent) and Black Caribbean (28 per cent) groups, contrasted with 10 per cent for White British counterparts. However, the conversion rates to start-ups remain relatively low. Creating a successful business requires ambition, skills and aptitudes. It demands innovation, creativity and a strategy to take the business proposition to market. Ethnic minority businesses are already highly successful and contribute £25 billion to the UK economy (DCLG, 2013), yet some minorities, particularly those from a Black African and Caribbean heritage, are underrepresented in this success and the question is: Why is that the case?

It is anticipated that the insights which will be gleaned from this Chapter will be relevant to both the private and public-sector firms, particularly those that engage with EMBs within the context of CSR and PSR frameworks.

In the recent review by Baroness McGregor (2017) titled Race in the Workplace, the Business Minister, Margot James, was quoted as saying that 'It is very wrong that, so many barriers lie in the way of people from ethnic minority backgrounds. Outdated attitudes or lack of awareness about ethnicity in the workplace must be challenged.' She was referring to employees within the workplace, but these same outdated attitudes and lack of awareness prevail within organisational culture, purchasing supply chains and the confines of CSR, both consciously and unconsciously.

Problem Definition

The broad purpose of this Chapter is to tie together the issues relating to the various concerns about CSR, diversity and supply chain management regarding corporate organisations within the UK. It attempts to explore and evaluate the notion of unconscious bias, cultural nuances and idiosyncratic behaviours exhibited by corporate organisations, to unearth whether a dichotomy exists between corporate CSR policies, PSR, and diversity engagement amongst ethnic minority businesses in the UK. According to Shah and Ram (2006) there are a multitude of policy stakeholders in the UK who are converging on the terrain commonly referred to as 'supplier diversity'. This Chapter addresses the following research questions:

1. How does CSR shape diversity supply chain practices?
2. Does a disparity exist between EMBs and Non-EMBs with supply chain engagement?
3. What are the social and economic benefits of EMBs' engagement as part of their CSR/PSR policies?
4. Are CSR, PSR and diversity engagement a corporate philanthropic conceptual misnomer to satisfy stakeholders?

Corporate Social Responsibility (CSR)

Corporate social responsibility (CSR) is a construct that has been described as the corporate pursuits that impact on different social groups (Sethi, 1995). Wood (1991) states that 'the basic idea of corporate social responsibility is that business and society are interwoven rather than distinct entities'. Other studies have often contextualised CSR within the construct of the stakeholder theory (Freeman, 1984). Stakeholders comprise customers and suppliers as well as employees, communities, and investors (Donaldson

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& Preston, 1995). While there are close links between stakeholder engagement and the dynamic nature of CSR, there is a non-specified or undefined stakeholder, social or environmental engagement process addressed within the CSR paradigm (Pedersen, 2006: p.140). CSR has been described as a nebulous concept cloaked in ambiguity regarding the precise definition of this hypothesis (Okoye, 2010; Scherer & Palazzo, 2007). However, the concept of CSR as a phenomenon contextualised within a contemporary setting has come into force within the last 35 years (Sethi, 1995). Furthermore, while there is an inherent lack of a consistent definition regarding CSR, it neglects to provide a framework or model for the systematic collection or needed analysis for this construct (Clarkson, 1995).

Davis (1973: p.312) defined CSR as 'the firm's consideration of, and response to issues beyond the narrow economic, technical and legal requirements of the firm'. This contrasts with Carroll (1979, 1991) who outlined a framework which asserts that CSR comprises economic, legal and ethical responsibilities, along with voluntary or philanthropic responsibilities which are steered by an organisation's discretion as opposed to legal or more explicit requirements. It is within the confines of social, ethical, economic and legal responsibilities that the level of engagement within purchasing social responsibility amongst EMBs within the context of CSR presents an inherent challenge.

Similarly, Sethi (1975) presents a taxonomy in which social activity includes social obligations as well as more altruistic social responsibility. Other dimensions and activities have been identified within the literature, most notably diversity (Clair et al., 1997), human rights (Jennings & Entine, 1999), environment (Shrivastava, 1995), safety (Wokutch, 1992) and philanthropy (Clarkson, 1995).

When addressing the issue of CSR within the context of economic theory, the return on investment (ROI) becomes an instrumental part of the discourse in relation to how CSR fits into a firm (Scherer & Palazzo, 2007, Margolis & Walsh, 2003). Organisations have a responsibility to stakeholders to maximise their profits and business leaders have a fiduciary responsibilities to the shareholders (Sundaram & Inkpen, 2004). Jensen (2002: p.235) has termed this strategy as 'enlightened value maximisation', which suggests that profit realisation is a prerequisite for CSR participation and is only pertinent if it advances the long-term value of the business (McWilliams & Siegel, 2001). Heal (2005) argues that when corporate and social interests are not aligned, markets do not do such a good job.

According to McWilliams et al. (2006), economists are not opposed to CSR, but they need to understand the economic benefits and the value-creating contribution of CSR.

Friedman (1962) held a juxtaposed economic view regarding the purpose of business, arguing that the management of a business has one sole responsibility and that is the maximisation of profits for its owners or shareholders. He posited that social issues were not a concern for business owners and that social problems should be determined by the unencumbered workings of the free market economy.

It has been argued that CSR is an out-of-date concept and organisations should be characterised as 'corporate responsibility' (Foster Back, 2005). Companies should build cultures of trust, where honesty and integrity are at the nucleus of the business. This view implies that businesses have a responsibility to demonstrate integrity in their purpose, processes and practices. But the idea of 'CSR' expresses more than simply the requirement that business should be conducted ethically. It refers to the notion of responsibility for the impact of corporate activity on the wider body of stakeholders, and it is this attribution of responsibility that underpins the willingness of society to legitimate business (Gray et al., 1996).

Heal (2005) asserts that there are numerous areas attributable to financial benefits derived from CSR policy integration, most notably: (1) Reducing risk, (2) Reduced waste, (3) Improving relations with regulators, (4) Generating brand equity, (5) Improved human relations and employee productivity, and (6) Lower cost of capital.

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Reducing Risk

The ability to moderate potential discord between organisations and stakeholders, particularly regarding the management of cash, is perceived to be a potential cause of conflict. Heal (2005) suggests that the avoidance or reduction of conflicts is indeed a major contribution of an effective corporate CSR programme. Within a cost and risk reduction standpoint, Crane et al. (2008) contend that there is an optimal level of social and environmental performance, after which the firm will accumulate costs additional to those required and reduce their level of profitability. McWilliams and Siegel (2001) propose that organisations will only perform to the level of responsibility that is demanded to maximise profitability.

Risk management addresses the issue of analysing potential risks and identifying ways to mitigate or accept those risks as part of doing business. Kytle and Ruggie (2005) present a three-step aggregation of the risk management process:

1. Establish a causal relationship between a risk/threat and an undesired outcome;
2. Identify the business elements that are exposed to the risk;
3. Act to eliminate or reduce the identified risk factor.

In the first instance, businesses as part of their due diligence have a duty of care to mitigate potential risks that may impact upon their brand through transgression via their supply chain. Within the context of PSR there is an inherent risk that organisations will be held liable for the absence of environmental and socially responsible practices by their suppliers.

There are a multitude of examples which underpin this assertion, notably Apple (Xiaoping, 2011). Heal (2005) cites Nike as an example where their market dropped off considerably when low wages that were being paid to their supply chains in developing countries were publicised. In the case of H&M, public perception and brand equity maximisation were negatively affected and could potentially have had a negative fiscal impact (Siegle, 2012).

The adoption and integration of appropriate accreditations, certifications and qualifications are determinant factors that may mitigate financial, environmental and social risks within the supply chain (Beske et al., 2008).

Health and safety accreditations such as safe contractor, construction line, ISO14000 and ISO9000, are the types of accreditations that may aid the mitigation of commercial risk.

Organisations are placed in a dichotomous position. Whilst they can insist that supplier organisations have the appropriate policies and accreditations in place, they cannot determine the validity and robustness of their suppliers' integrity and ensure that they are fully compliant with said policies. Porter and Kramer (2006) suggest that organisations are not capable of solving every issue in the community and broader society, but they can leverage PSR activities that are aligned with their business model.

Reduced Waste

The reduction of waste is a critical component in underpinning CSR policies. The reduction of greenhouse gas emissions, toxic waste and chemicals usage is continually being discussed (ibid.) and is a key issue within the structural context of CSR and protection of the environment.

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Regulatory Relations

Organisations' interaction with watchdogs or regulators can create distinct competitive advantages, particularly within heavily regulated sectors. A reputation for being 'green' can be a major benefit to oil and gas companies when negotiating contracts for access to new oil reserves within ecologically problematic areas (ibid.). Requests for exploratory permits are quite often robustly opposed by environmental groups, and this means that organisations that have a track record or are perceived to be environmentally considerate may be able to mitigate the reservations raised.

The perceived wisdom suggests that regulatory decisions will be more favourable towards organisations that exhibit greater socially responsible behaviour, in contrast to those organisations which may flout the law or have a poor track record, and it is in this context that influence amongst regulators will be leveraged (Heal, 2005).

Brand

Prior to addressing the issue of brand equity, a brief synopsis is required to contextualise the concept of branding. Rampersad (2008: p.35) suggests that branding is more 'powerful and sustainable than marketing and sales and is an effective way to eliminate your competitors'. According to Fombrun (1996) and De Chernatony (1999), corporate branding is the intangible asset of a company. A brand is formed by impressions that are based upon observations of what and how organisations do things and by the standards to which they do them. Van Riel and Balmer (1997) define corporate identity as the organisation's ethos, aims and values that create a sense of individuality which differentiates one brand from another brand.

A brand is perceived to be a clear, powerful and compelling public image which conveys and communicates who you are as an organisation and what you specialise in doing. Organisations benefit from developing strong brands in a variety of ways: they offer businesses the opportunity to extend their product or service range; companies can charge a premium for their products or services; they increase their market valuation; they enable the brand to thrive during tough economic times; and they enable the organisation to attract and retain quality stakeholders, both customers and employees (Arruda, 2003).

Brand Equity

The American marketing association (AMA, undated) defines brand equity as 'the value of a brand, from a consumer perspective … brand equity is based on consumer attitudes about positive brand attributes and favourable consequences of brand use'.

A strong brand presents consumers with a consistent and positive message that differentiates one brand from another. The strength of a brand occurs in the minds of consumers, in what they perceive, have learned or experienced during their interaction with the brand. Consumer knowledge is really at the heart of brand equity. It also acts as a stimulus within the consumer's decision-making process. Heal (2005) contends that competition and homogenisation of technology, products and service has diminished any form of competitive advantage from operating within a competitive marketplace. Positive brand image can become the 'tipping-point' within the customer's decision-making process. Brand equity will enable organisations to derive a competitive advantage over their competitors when goods or services alone are no longer enough to retain or attract new clients (Gobe, 2001).

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Heal (2005) cites Nike as an example where their market dropped off when the low wages paid to employees in developing countries were publicised. Maloni and Brown (2006) asserted that non-governmental organisations (NGOs) were very critical of apparel companies such as Nike regarding sweatshop labour issues at their overseas suppliers. Nike's initial reaction was negative and combative regarding their social responsibility obligations within their supply chain; however, this entrenched view changed when the weight of public opinion shifted, and they were subjected to consumer pressure (Zadek, 2004). Consequently, the clothing industry in its entirety has adopted a more diligent approach to supply chain engagement, congruent with their CSR policies with attention to supplier labour codes (Emmelhainz & Adams, 1999).

In contrast, SeaWorld's public image was tarnished when CNN's 'Blackfish' documentary brought to light their less-than-desirable habitat for their Orca whales, and the company's stock traded down by 33 per cent (MarketWatch.com). The BP 2010 oil spill significantly harmed the company's reputation, and Shell suffered a loss of sales in Europe at the time of the dispute over its disposal of the Brent Spar oil buoy. Starbucks was pursued by NGOs for not providing fair trade prices to coffee suppliers, and as a result introduced fair trade coffee within their stores (Maloni & Brown, 2006). The brand reputations of Starbucks, Google and Amazon took a severe blow in Britain during 2012 because of criticism over tax avoidance. All three entities have admitted to using extremely favourable European jurisdiction laws to mitigate or avoid tax. Whilst this is not illegal it is perceived as unethical and not in the spirit of the law or in the spirit of their CSR policy.

According to the BBC (2012), Google's UK business paid circa £6m to the Treasury in 2011 on a UK turnover of £395m. Starbucks reportedly paid just £8.6m in corporation tax in the UK over 14 years and Amazon generated sales of more than £3.3bn in the UK last year but paid no corporation tax on any of the profits.

Organisations may unwittingly cause irreparable damage to their brands equity by operating within confines of a CSR framework that harms the citizens that it proffers to serve, through their use of discriminatorily CSR policies which become counter-productive, and may well hinder their competitive advantage.

Improved Human Relations and Employee Productivity

Whilst CSR has been described as a nebulous concept cloaked in ambiguity (Okoye, 2010), the contribution and benefits derived from engaging within a CSR environment are evident and multifaceted. There is a growing body of evidence that suggests that organisations employing CSR policies yield stronger financial performance (Orlitzky, Schmidt & Rynes, 2003). Enhancing their corporate governance in this respect strengthens their reputation and increases their competitive advantage. This assertion contrasts with Maloni and Brown (2006), who contend that the financial success of Starbucks has been constrained as they have found that their customers' appetite for fair trade coffee was relatively subdued and that certified suppliers often lack consistency in volume and quality (Schrage, 2004). This highlighted the fact that although fair trade offerings may help appease adverse public opinion regarding financial impartiality amongst their suppliers, they may not be profitable, in this instance for food companies.

Firms that have been able to demonstrate that they are committed to good employee relations through CSR because of their organisational culture and leadership have found a strong correlation between employees' commitment to their organisation based upon how they rate its social responsibility (Orlitzky, Schmidt & Rynes, 2003). This assertion is underpinned by the Reputation Institute, which found that

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on average, 75 to 80 per cent of those polled in over twenty-five countries would 'prefer to work for a company that is known for their CSR'.

Smith (2005) affirms that employing CSR practices, relating to equal employment opportunity (EEO) policies and procedures, engenders long-term shareholder value by reducing costs and mitigating risks. He argues that unequivocal EEO declarations are essential to demonstrate an inclusive policy which decreases employee turnover through improved staff morale. This is juxtaposed to the Gallup Employee Engagement Index chapter (2010), which stated that 33 per cent of employees were characterised as being engaged by their companies, 49 per cent were not engaged, and 18 per cent were actively disengaged.

Davis (1973) argues that businesses are not equipped to control social activities. He contends that managers are focused on the financial and operational aspects of the business and do not possess the necessary expertise and social acumen to formulate socially oriented decisions.

Other studies have highlighted that in organisations which have a significant level of corporate social responsible culture it has manifested itself as a motivational driver for employees. This was particularly evident in the USA in contrast to India and South Africa, where employee motivation transpired to be even more prevalent (Mivis, 2012).

McKinsey's Diversity Matters report (2015) analysed data from 366 companies situated throughout the United Kingdom, Canada, Latin America, and the United States. The research was geared towards diversity within leadership teams and within the general workforce. However, this Chapter asserts that the results can be contextualised and extended to the supply chain management, as the employer and the supplier enjoy a symbiotic relationship in the same way as an employee would be perceived to have. The suppliers to the organisations can be perceived as enablers for firms to deliver a competitive advantage and as such offer additional benefits to an organisation.

This postulation is consistent with Christopher (1992) who argues that supply chain management is concerned with achieving a more cost-effective solution for consumer requirements through greater buyer/supplier process integration and engagement. Christopher and Jüttner (2000) suggest that there is a greater level of interdependency amongst stakeholders within the supply chain, and this assimilation has come as a realisation that cooperation and partnership are essential prerequisites for the achievement of long-term mutual business benefits. This repositioning towards a more cooperative and integrated environment within the supply chain will produce considerable competitive advantages, to the extent where the supply chains compete and not companies, and as such offer additional advantage for the firm (ibid.).

Economic Enhancement

Heal (2005) maintains that CSR programmes are imperative, particularly where there are disparities between corporate profit objectives and social goals. He states that where competitive markets are robust and CSR policies are fully engaged, organisations will tend to yield greater fiscal outcomes, and where this is achieved the benefits are equitable for both the organisation and society at large.

McKinsey (2015) published a report that continued the discourse regarding diversity and economics, attempting to understand the relationship between diversity and performance in relation to the levels of profitability. Their research revealed that there was a statistically significant correlation between diversity and financial performance. Companies within the upper quartile of ethnic diversity engagement were 35 per cent more likely to have greater financial yields comparative to their national industry average. This relationship was also present when considering gender. The more ubiquitous and embedded an organisa-

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tion was in relation to diversity engagement, the greater the level of yield was derived, and this would suggest that higher levels of diversity engagement lead to better financial outcomes. Organisations also benefited from greater BME engagement in other multifaceted ways ranging from the political, social and economic, in addition to the human capital enhancements that were derived because of increased levels of motivation. Augmented performance then led to better staff retention rates whilst optimising their competitive advantage.

Organisation Culture

When considering an organisation's culture, values and desire to be good citizens, complexity arises because there is an inherent dissonance between organisations and their employees' values, which may be incongruous with those of the organisation. Companies will fail to persuade stakeholders that they are serious about CSR unless they can demonstrate that their policies are consistently attained and the desired social, environmental and ethical outcomes are realised (Collier & Esteban, 2007). Diversity has become a business slogan catchphrase in recent times, with numerous C-suite executives viewing it as simply a tick-box exercise, as noted in a recent article by Oliver Pickup in the latest edition of Raconteur (2017).

It could be argued that it is extremely difficult for an organisation to determine the extent to which it has the undivided support from their employees in implementing their CSR agendas and policies. As noted by Mivis (2012), what organisations can do to ensure that their employees are motivated and committed to attaining their objective culture is influenced by their degree of employee engagement.

Collier et al. (2007) contend that compliance and code of conduct activities can potentially stimulate the kind of employee 'buy-in' necessary for companies to deliver their CSR agenda. However, they also argue that employee commitment to CSR is a complex and multifaceted phenomenon that will be influenced both by corporate contextual factors such as organisational culture and by their employees' perceptions. Within the United Kingdom, circa 90 per cent of FTSE 100 organisations and 60 per cent of FTSE 350 companies have adopted codes of conduct, but their importance and use fluctuate from one organisation to another. The Institute of Business Ethics (IBE) survey of 196 major UK companies suggested that having codes of conduct would ethically underpin organisations' CSR. Webley and LeJeune (2005) suggested that since the last survey in 2001 there has been a growth in the use of codes of conduct as a benchmark for employee behaviour. Yet there still appears to be a widening gap between a company's stated values and principles and their bearing on organisational practice, and it is this type of disparity that will continue to be a cause of concern for CSR and PSR diversity engagement.

An organisation's culture or climate permeates throughout the entire organisation, and this determinant may well transcend ethical considerations or legal obligations (Collier & Esteban, 2007.) When considering culture and climate in theoretical terms the difference between the two concepts may be stark, but when they are observed from a pragmatic perspective they both form part of the organisational context, so there will be parallels and commonalities as well as disparities (Trevino et al., 1998).

Within a large proportion of organisations, there is an inherent belief about how things should be conducted, acceptable practices, degrees of formalisations, and how people should be managed (Handy, 1993), which manifest into organisational norms that can be described as culture. Culture is described as homogeneous attributes that distinguish one human group from another, which provides a context in relation to norms and values that underpin how organisations manage relationships (Griffith & Myers, 2005).

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The concept of culture is both broad and multifaceted, so it is therefore necessary to define what organisational culture means within this context. Schein (2010: p.18) defines culture as:

A pattern of shared basic assumptions learned by a group as it solves its problems of external adaptation and internal integration, which has worked well enough to be considered valid and therefore to be taught to new members as the correct way to perceive, think and feel in relation to those problems.

This is consistent with Hofstede's (2003) postulation which states that culture is a collective phenomenon shared by people who operate within the same social environment where the culture is learned. This is what he describes as the 'collective programming of the mind' (2003: p.5) which differentiates followers of one group or type from another.

It is this shared pattern of behaviour, norms and nuances which exists within an organisational climate that will shape CSR and PSR practices, and may well have a bearing on EMBs' engagement within the supply chain because of their unconscious nature.

The term 'climate' implies some form of climatic characteristics such as temperature, or it can be categorised as a distinguishing condition that can influence the inherent values and disposition that an organisation might display. The organisational climate may also be responsible for the ubiquitous mindsets that perpetuate within an organisational setting (Collier et al., 2007).

According to Downey (1986: p.7) corporate culture:

… in fact flows from and is the consequence of corporate identity. The fundamental style, quality, character and personality of an organisation, those forces which define, motivate, and embody it. Its unique history, business mix, management style, communication policies and practices, nomenclature, competences, and market and competitive distinction.

Culture is both visible and invisible. An organisation's culture is detectable from their operating norms and values which permeate throughout and remain stable within it (Schein, 2010). It is this permanency of cultural identity within an organisation that gives rise to its longevity within its customs, practices, norms and values. These cultural characteristics may be juxtaposed to those prescribed within CSR policies, with reference to engagement with EMBs.

At a visible level, culture manifests itself through the practices, patterns of behaviour and pervasive methods exhibited by members of an organisation. The norms inherent within an organisation will permeate throughout an organisation, and they will be introduced and taught to new members of the team through shared values, training and practices (Kotter & Heskett, 1992). At this level, culture is easier to change and embed within an organisation.

In contrast to visible culture, invisible culture is concerned with the values and goals that are shared by its members. This value persists over long periods of time and remains stable and intact within an organisation even when the group membership changes (Kotter & Heskett, 1992; Schein, 2010).

Invisible culture is deeply ingrained within the organisational mindset, which implies that it is harder to change. Schein (2010) argues that culture is the deepest and most unconscious part of an organisation, and when something is deep-rooted it offers endurance and immovability. The question that arises relates to unconscious bias and its existence within organisations, and whether this impacts on CSR and PSR relative to EMBs.

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Schein (1984: p.10) asserts that:

Culture serves as a function of stabilising the external and internal environment of an organisation, it must be taught to new members as it would not serve its function if every generation of new members could introduce new perceptions, language, thinking patterns and rules of interaction. For culture to serve its function it must be perceived as correct and valid, and if it is perceived that way, it automatically follows that it must be taught to newcomers.

Hatch and Shultz (2001) maintain that to build a strong corporate brand there must be congruency between its strategy, culture and reputation, and where there is alignment between the organisation's values and ethics this will aid the performance of the organisation.

Unconscious Bias

Unconscious bias may possibly be considered as one of those deep-rooted components that exists within the confines of organisation culture, which transcend legal and ethical considerations; it denotes an individual's lack of awareness of the effects of their exploits and the impact on other people, social institutions and organisations. When unconscious bias is contextualised within this environment, it attracts attention of the unintentional behaviours in which one's actions promote racial disparities. The MSDUK (2012) impact assessment stated that 36 per cent of corporate members expected EMBs to be slightly behind the standards of their existing suppliers in their ability to deliver large contracts, based on a perception without any first-hand quantifiable evidence to support this assertion.

Such unconscious bias has been defined in sociological terms as institutional racism (Carmichael & Hamilton, 1967). There is widespread discourse suggesting that unconscious bias is both prevalent and compelling within contemporary societies (Munar, Villesèche & Weidemann, 2016). Researchers have also postulated that an individual may retain one set of conscious attitudes that support racial tolerance and another set of unconscious attitudes that are racially biased (Banaji, 2001; Greenwald et al., 1998) and it is this paradox of incongruity that may manifest itself within the construct of PSR and CSR.

This type of perception ambiguity is prevalent within the confines of the perception literature. Research suggests that people might be influenced by a person's race but might fail to recognise this influence for themselves. Researchers also submit that social stereotypes occupy voids in meaning when the consequences of one's action or an episode are vague, thereby initiating a biased reaction and translating this into a rational objective and justifiable cognitive process (Kunda & Thagard, 1996). According to Dovidio and Gaertner (2004), people have the capacity to hide their true beliefs from themselves and others through intellectual reasoning.

The role of perception was further bolstered by Devine's (1989) study, which employed a computer-based orientated task to 'subliminally prime' participants with words associated with black stereotypes. The task was designed to activate stereotypes beyond the individual's level of conscious awareness. There were various words presented for micro-seconds and then intermittently mixed in between other words. After being exposed to different primed and non-primed words, the participants were required to read a short passage regarding an actor who was engaged in an indistinct activity. The race of the individual was not revealed, nevertheless after being primed with racially biased words the participants' interpretation of the behaviour was perceived as more probable to be hostile, thereby reinforcing the construct of unconscious bias.

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Such behaviour highlights how individuals and or organisations can unwittingly become entrenched with inherent bias, to such an extent that they are unaware that they fail to recognise how their implicit and explicit compliance with the accepted social cultural norms unintentionally reinforces existing inequalities. This interpretation of unconscious bias is akin to the unwitting actor portrayed in the theory of symbolic racism (Sears & Kinder, 1971).

Within the construct of social psychology, it has been recognised that human behaviour intellectually tries to rationalise and categorise people like entities, and according to Green (2003) the consequence is that cognitive biases can ensue, thereby propagating an individual's cerebral thinking which in turn engenders an implicit reliance on stereotypes.

According Lee's (2005: p.483) social cognition theory 'stereotypes are a person's prototypes'. These stereotypes then function as innate belief mechanisms that interpret and distil forthcoming data and they also govern how information is retained.

The emergence of stereotypes causes discrimination by influencing how individuals process and recall information about other people (Lawrence, 1987), quite often based on limited or no information. Hence this is why when a recipient has stored information in this manner the memory becomes distorted by stereotype, which is the retained memory, as opposed to the unprocessed incoming communication (Lee, 2005)

Lawrence (1987) argues that once a person has developed stereotypical beliefs, they retain and remember them within their subconscious and retain stereotypically congruent behaviours regardless of the determining event not actually occurring; furthermore, stereotypically incongruous behaviour that has occurred is stored in a more distorted and understated way and consequently has a less profound recall effect on the memory-bank of the decision-maker.

In recognition of social and racial inequalities the UK government launched a toolkit for employers in support of the Equality Act 2010. The toolkit was labelled 'Know Yourself Unconscious Bias Toolkit' and offers generic advice on how businesses can be compliant with the Equality Act. The introduction of an 'unconscious Bias toolkit' is both recognition and substantiation of the inherent challenges faced by EMBs within private and public sectors in the UK. The introduction of legislation is further confirmation of the inherent inequalities that exist within the supply chain. It was initiated to mitigate the risk of unconscious bias and to prevent long-term structural incongruities.

The literature supports the assertion that unconscious bias exists in the form of an inability for an individual to separate out their own beliefs and values from those of the organisation. CSR and PSR have racial implications for both the organisation and the individual. Blanton and Jaccard (2008) contend that organisations may be subject to the following: (1) the subjectivity of an individual's own unconscious bias may affect purchasing decisions; (2) institutional racism demonstrates how actors embedded in a culture might fail to see the racial implications of their actions; and (3) a person's perception reveals how social factors can produce unconscious racially biased behaviour. Lawrence (1987) attests that where most of a group's members have little or no contact with EMBs, stereotyped perceptions of BME groups manifest in the form of illusory correlations between minority groups which become the 'triggers' for negative behavioural events.

Lee (2005) postulates that unconscious bias is an emerging form of discrimination that limits employment opportunities for both women and ethnic minorities. However, this Chapter would argue that unconscious bias not only relates to employment but also extends to the supply chain and is an influencing determinant when making purchasing decisions, which has a negative effect on EMB engagement within the supply chain.

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Purchasing Social Responsibility

Within the context of the supply chain, Carter and Jennings (2000) assert that procurement managers within socially responsible organisations are the custodians of the management of that supply chain. This concept is categorised as purchasing social responsibility (PSR), which consists of an eclectic assortment of behaviours that largely fall into the dimensions of environmental management, diversity, ethics, community, safety, human rights and quality of life.

To understand PSR and diversity further within the supply chain, a review of the drivers and barriers will need to be undertaken. CSR has been defined by Carroll (1979) and Wartick and Cochran (1985) as 'meeting the discretionary responsibilities expected by society'.

This definition has encapsulated various activities relating to (1) diversity, (2) the environment, (3) human rights, (4) philanthropy and community, and (5) safety. The definition is consistent with the PSR conceptualisation and empirical findings of Carter and Jennings (2000, 2004). They coined the term purchasing social responsibility (PSR) as consisting of a multitude of different behaviours which extensively drop into four taxonomies: (1) environmental, (2) management, (3) safety, and (4) diversity.

Within this context, Blowfield and Frynas (2005) have provided a framework to understand the various theories and positions that characterise CSR:

1. Companies have a responsibility for their behaviour toward others with whom they do business;
2. Businesses need to manage their relationships with the wider society;
3. Companies have a responsibility for their impact on society and the natural habitat; this is sometimes beyond the confines of the law, regulations and compliance.

While PSR and CSR can be perceived as separate and standalone entities, they can also be regarded as co-dependent. It is important that supply chain managers are cognisant of CSR, as they are are both the transmitters and the interpreters of organisational CSR policy and stakeholder engagement. They are often perceived as the vanguard intermediaries in relation to external stakeholders, which include suppliers, customers, and regulatory bodies (Carter & Jennings, 2000). This part of the chapterwill examine PSR, ethical considerations, legal responsibility, philanthropic considerations, and responsible business practice.

The research would suggest that purchasing managers who understand supplier relationships well can develop and enhance their knowledge about the drivers, barriers, and outcomes of initiating activities within areas of CSR, such as sourcing from EMB suppliers. Carter and Jennings (2004) postulate there are at least four significant and direct drivers to PSR:

1. People-oriented organisational culture that espouses values such as fairness and the desire to be a good corporate citizen;
2. Organisational policies that promote social responsibility;
3. Individual employee initiatives;
4. Pressures from external customers.

According to Shah (2014), all forms of procurement pursuit, regardless of its level, whether global, national, regional or local, will stimulate some form of economic reaction. It kindles entrepreneurial tendencies, generates innovation, and supports and creates employment opportunities whilst nurturing

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growth within local, regional and national economies. There is a rudimentary presupposition that any economic benefits which can be derived from procurement activities can only be realised within their entirety when the inherent sourcing processes and practices of all purchasing organisations are inclusive and involve businesses from under-represented and disenfranchised groups such as EMBs.

The Road to Procurement Report, published by MSDUK in 2014, paid reference to the UK government's contracts finder portal which has been highlighted as a forum that affords greater visibility and opportunities for EMBs/SMEs. However, the paradox is that the portal does not collate any data regarding EMBs' diversity engagement, yet under the UK Equality Act 2010, public bodies must consider minorities within their budgets and expenditure.

Pearson et al. (1993) contend that sourcing minority businesses with the required capacity to supply corporations is often perceived as a significant barrier to supplier diversity. Procurement staff who participated within Pearson et al.'s (1993) survey of US corporations stated that it was the unavailability of qualified EMBs which was a major limiting barrier to supplier diversity engagement initiatives. This assertion was relatively consistent with the findings of Shah and Ram (2006), who assert that suppliers have experienced difficulties in locating minority suppliers who are 'willing, able and competent' to do business, and that this is a major challenge for the recipient organisations within their research. Smallbone et al. (2005) further suggest that one of the most distinguishing features of EMBs within the UK is their tendency to congregate and operate within low-value-added enterprises, which are often perceived as poorly skilled and low paid.

This contrasts with previous research that focused on the emergence of new areas of EMB activity, such as in business and professional services, IT, and hospitality and entertainment, often correlated with a transitional shift due to cultural, generational and social changes (Modood et al., 1995). Ethnic minority groups who were born and educated in the UK will have different social and cultural attitudes and experiences in contrast to their parents (Smallbone, 2005), and as such the historical and entrenched perceived views are somewhat outdated, contradictory and debilitating to EMBs which have the capacity and capability to fulfil potential opportunities.

Shah and Ram (2006) state that EMBs have also been perceived as being hindered because of their concentration in a comparatively small number of industries. Consequently, they were perceived to lack the relevant competence, expertise, specialist skills, flexibility, and sufficient capital. This assertion was based on perception and is not underpinned by any empirical data.

EMBs continued to be challenged by additional inhibitors, which further diminished their opportunities to be actively engaged within the corporate supply chain. Initially, EMBs were inhibited by a shifting trend towards supplier streamlining, as corporations continued opting out of working with smaller suppliers and chose to work with a limited number of larger suppliers, who were perceived as being more responsive and more adaptive to their needs.

The size and capacity of suppliers, particularly first-tier suppliers, have tended to increase. Large firms often streamline their operations by seeking larger first-tier suppliers that can deliver high volumes of the right quality at speed, and have substantial capital resources (NMSDC, 2002) to achieve economies of scale. According to Spend Matters (2016), organisations and their procurement teams have a propensity to operate within their comfort zones, as they continue to make purchases from their existing supply chain, which is often perceived as safer and more robust since it is larger. The same source goes on to assert that large organisations continue to operate with 'clumsy or biased selection processes' that make it difficult for new potential suppliers to penetrate.

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The literature reveals that higher levels of PSR engagement can lead directly to improved levels of supplier performance, suggesting that PSR activities are more than just aesthetics that can be used for marketing campaigns which emphasise the firm's social responsibility. Instead, direct, tangible benefits result in the form of improved supplier performance (Carter & Jennings, 2000).

Ethical Considerations

Ethical supply chain management procedures consist of dependability and integrity in purchasing, diminishing packaging and waste, sense-checking the supply chain regarding its environmental performance, and developing eco-friendlier products (Walker, Sisto & McBain, 2008). The key consideration in this context lies with the honesty in making purchasing decisions.

Akhtar (2014) states that the ethical supply chain should locate itself at the nucleus of industrial integrity, sustainability and business excellence for long-term growth. Carter and Jennings (2004) posit that CSR has become synonymous with business ethics. They were also able to empirically categorise the CSR supply chain into specific compartments, notably the environment, diversity, human rights, philanthropy, and safety, but they found that ethical concerns relating to procurement represent a separate issue from CSR (Carter and Jennings, 2002a,).

The Institute for Supply Management (2005) has an expressed set of values which underpin its ethical position in the context of socially responsible purchasing behaviour. It has determined that specific areas, such as the use of confidential or proprietary information, impropriety, conflict of interest, power abuse, deception, influence, responsibility to the employer, reciprocity and special treatment, would be regarded as unethical practices. Any contravention or improper abuse of the supply chain process can impede an organisation's supply chain CSR policy and undermine their core values. Carter (2000a), on the other hand, offers up additional areas for consideration of unethical behaviour, such as bribery, gifts, preferential treatment, obscure or unfavourable contract terms, favouritism and retendering past due dates. In contrast, Cooper et al. (1997) observed that unethical issues relating to purchasing extend to exhibiting preference (bias) to one supplier over another, allowing personality bias to influence purchasing decisions, and failure to provide the same degree of responsiveness to one set of suppliers when contrasted with another. Maloni and Brown (2006) assert that other ethical issues should also be considered, such as professional competence, degree of legal compliance within the organisation, and the degree of promotion of disadvantaged and minority suppliers. To confound procurement issues further, Carter (2000b) found significant differences in perceptions of ethical issues between buyers and suppliers.

As noted by Blanton and Jaccard (2008), organisations may be subjected to an individual's own unconscious bias which may obscure purchasing decision and ethical consideration for EMBs and become an organisational limitation. Carroll (1979) asserts that business was designed by society to contribute to the economic system to satisfy its social function. The path and ground rules were set for the introduction of systems, laws and regulations to underpin the economic model by regulatory controls. However, the absence of ethical consideration for EMBs is a key challenge for EMBs within PSR.

Philanthropy

Business philanthropy is a tool designed within the confines of CSR, to enhance corporate legitimacy and standing. Chen et al. (2008: p.131) postulate that 'corporate philanthropy may be a tool of legitimisation'. They further contend that organisations that have undesirable social competency within the

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context of environmental matters and product safety will exploit philanthropic contributions as a means for building their legitimacy. Kamens (1985) posits that organisations may use philanthropy as a way to bolster their legitimacy through creating trust.

Porter and Kramer (2002: p.59) assert that organisations may well gain a competitive advantage because of the introduction of philanthropic activities, whilst those activities are aligned to causes where there is a 'convergence of interests' between the economic reward and the social benefit. Tokarski (1999: p.34) contends that strategic philanthropy is a process whereby organisations' contributions are directed to serve specific business interests. Whilst also servicing beneficiary businesses, it enables organisations to gain a competitive advantage and as a result enhances their financial position (Seifert et al., 2003). Bruch and Walter (2005) argue that companies will use philanthropy to enhance their competitive advantage through a mixture of external commercial activities and internal competence. Through a market alignment, organisations devise their philanthropic pursuits to meet commercial demands and stakeholder expectations.

Organisations that are able to adopt a competency-based approach for their business and can underpin their philanthropic activities with their core competencies will have a greater capacity to derive competitive advantage. 'In so doing, they avoid distractions from the core business, enhance the efficiency of their charitable activities and assure unique value creation for the beneficiaries' (Bruch and Walter, 2005: p.50). Consequently, firms can improve their competitive advantage through 'improved marketing and selling capabilities, higher attractiveness as an employer or better relationships with governmental and non-governmental organisations' (Bruch & Walter, 2005: p.50).

CONCLUSION

A number of themes have emerged from the analysis of CSR and how it has shaped corporate diversity engagement within the procurement supply chain amongst ethnic minority businesses within the public and private sectors in the UK. We offer up a series of observations and conclusions that can be derived from this Chapter, According to Nwagbara and Reid (2013), in order for organisations to be perceived by other stakeholders as CSR acquiescent, they must habitually continue to revaluate their business models by developing new ways of thinking and learning new methodologies to act in socially responsible ways in congruence with the ever-chainging macro-, micro- and socio-economic environment. CSR can and does play a crucial role in preserving the ethical, legal and political interface between organisations and EMBs, by mitigating this unconcious bias that exists, so that organisations can operate as intended, for the good of the people, profit and the planet.

In addition, it seems evident that a CSR and PSR procedure can enhance the profitable element of corporate strategy, underwriting risk management and preserving relationships that engender long-term economic sustainability.

Economic Performance

This chapter contends that there is a correlation between diversity and the economic performance of corporate organisations that actively engage EMBs in their supply chain. This relationship is likely to gather momentum as businesses continue to operate within a global market economy (Hunt et al., 2015). The chapter also asserts that EMBs are making a significant contribution to the supply chain and for the

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economic prosperity of corporate and non-corporate entities. However, it is evident that there are inherent barriers and constraints that exist for EMBs. These disparities persist despite corporations upholding their positions regarding CSR policies. McKinsey's (2015) diversity report argued that correlation does not equal causation, contending that greater gender and ethnic diversity in corporate leadership does not automatically translate into more profit. Yet the correlation does indicate that companies that commit themselves to diverse leadership are more successful than those organisations that do not.

Whilst there are no guarantees that having an EMB within the supply chain engenders better performance, explicit data and implicit postulations would support this assertion. McKinsey's report states that organisations that actively engage with EMBs within their supply chain are better equipped to win more business, attract better talent and operate seamlessly within a diverse global economy which has inherently diverse consumers. Operating with a global mindset and with cultural alacrity will offer a degree of competitive advantage for companies that can engage EMBs within their supply chain. Operating with a diverse supply chain and diverse employees makes good economic sense. Creating equality within the supply chain will ensure that procurement teams within both the private and public sectors have access to the best available talent pool, resources, flexibility and commercial terms. The imbedding of PSR behaviour will underpin and be congruent with the organisation's CSR policies.

The formation and integration of EMBs in the supply chain will intensify and underpin CSR policy within organisations and enhance their economic prosperity. In addition, it will address the inherent imbalance that exists, help to develop socially and economically challenged communities, and redress this imbalance and disparity of wealth creation and sustainability. This Chapter contends that the adoption of CSR policies will enhance an organisation's brand reputation. It also suggests that there is a correlation between a positive brand image and competitive advantage, through influencing the customers' decision-making process. Brand equity will also enable organisations to derive a competitive advantage over their competitors in a market where goods or services alone are no longer good enough to retain or attract new clients (Gobe, 2001).

Purchasing Social Responsibility (PSR)

This chapter also contends that procurement departments have an ethical, legal and economic obligation to their organisation to ensure that they adopt best practice in relation to PSR. PSR forms part of the symbiotic relationship with CSR and it is important that supply chain managers are cognisant of their CSR roles and responsibility. They play a critical role in the delivery of CSR policies as they are both the transmitters and the interpreters of organisational CSR policy and stakeholder engagement. They are recognised as the intermediaries in regard to external stakeholders, which include suppliers, customers, and regulatory bodies (Carter & Jennings, 2000). Trust in turn leads to cooperation between buyers and PSR suppliers. Eventually, the cooperation between buyers and their PSR suppliers increases supplier performance. When PSR buyers trust their suppliers' activities, they are more willing to cooperate by providing assistance to these suppliers and jointly solving problems as they arise. The analysis suggests that cooperative strategic relationships with EMBs are a precursor for delivering results that exceed those that the buying organisation might have achieved by acting independently and solely in its own best interests. For procurement managers, these findings imply that closer cooperation with EMB suppliers through PSR initiatives can result in improved performance by these suppliers in such areas as product quality and lead times (Carter & Jennings, 2000).

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Unconscious Bias

The analysis and the literature reinforce the assertion that unconscious bias exists within organisations despite their endeavour to present a picture of cultural equity and objectivity underpinned by a legal, structural and CSR environment in which they operate. There is an inherent discord between the individual's own beliefs and values and those of their organisation's CSR and PSR policies.

Unconscious bias is a complex, dynamic, psychological paradox which has racial ramifications that impact both the organisation and the individual's wellbeing. It is not improbable to suggest that individual or collective buyers may not have the mental capacity to separate their own unconscious bias, beliefs and values when considering purchasing decisions and engaging EMBs.

Culture has been described as the 'collective programming of the mind' of norms, beliefs and values that distinguish one entity from another. Where an organisation has demonstrated institutional racism, and where racism is embedded into the culture so acutely, employees may fail to recognise the racial repercussions of their actions. An employee's perception will often be influenced by their social interactions, media, peers, family and friends, and these actors will all contribute to the shaping of unconscious racially biased behaviour. Lawrence (1987) asserts that where many of a group's members have little or no contact with EMBs, stereotyped perceptions of EMBs are formed, and these perceptions manifest in the form of illusory correlations between EMBs, which become the 'triggers' for negative behavioural episodes involving distorted stereotypes. As determined within the literature, a stereotype is a retained distorted memory and stereotypes cause discrimination by influencing how individuals process and recall information about other people and EMBs.

Philanthropic Consideration

Organisations that are able adopt a competency-based approach for their business and can underpin their philanthropic activities with their core competencies will have a greater capacity to derive their competitive advantage. 'In so doing, they avoid distractions from the core business, enhance the efficiency of their charitable activities and assure unique value creation for the beneficiaries' (Bruch & Walter, 2005: p.50).

Marketing and Brand Equity

Organisations that actively engage with EMBs can improve their competitive advantage through 'improved marketing and selling capabilities, enhanced image as an employer, and they are able to build better relationships with governmental and non-governmental organisations'. As a result, they generate greater brand equity which in turn affords them a greater level of competitive advantage (ibid.).

Organisational Culture

Strategy and culture between an organisation's sustainability initiatives and its corporate strategy must be closely interconnected, rather than separate philosophical paradigms that co-exist independently of one another (Shrivastava, 1995a). When an organisation is able to align its organisational culture with its strategic objectives in relation to CSR and PSR, it will become the recipient of enhanced social, economic and ethical equity within a wider society whilst concurrently fulfilling their CSR obligations to work with EMBs. Organisations that embrace CSR and PSR policies and integrate them as part of their

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organisational culture will derive a greater competitive advantage, increase brand equity and improve their economic prosperity.

Today, a mindset-shift is required as more responsible governance and business practice is necessary to mitigate unconscious bias that exists within both the public and private sectors. This will enable businesses to benefit from greater social equity, which will underpin longer sustainability. Whilst CSR, PSR and diversity engagement are legitimate tools that are designed to act as the social organisation's conscience, to be philanthropic, there is a significant risk that they can become a conceptual hallucination that permeates throughout the organisation subconsciously to satisfy stakeholders and the business's bottom line of profitability

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Chapter 23
Knowledge Management and Ergonomics Implementation in Manufacturing Systems:
Development and Validation of a Questionnaire for Critical Success Factors

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ABSTRACT

This chapter presents a knowledge management and Ergonomics implementation in manufacturing systems, through the development and validation of a critical success factors questionnaire. The instrument developed measures the frequency of inclusion of critical success factors for the implementation of Ergonomics and its benefits, validated in the manufacturing industry. The frequency is based on a five-point Likert scale. So far, no instrument able to measure such factors has been found in the literature. The questionnaire comprises 73 questions presented in four main stages: planning, process startup stage, work improvement cycle and long-term development. In addition, it contains a section of benefits regarding health and safety, operational and quality of life at work. The instrument was validated through a pilot test involving 140 participants from seven companies in the manufacturing sector of Ciudad Juárez, Chihuahua, México, through the use of an intentional selective method.

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INTRODUCTION

The word Ergonomics comes from the Greek word "ergon," meaning work, and "nomos," meaning law. Thus, Ergonomics means "the law of work" (Bridger, 2003). Today, Ergonomics is an accepted term worldwide. This science focuses on improving the interaction between people and the things and environments around them (Wilson, 2001). Ergonomics includes a large amount of knowledge and techniques and involves the work of professionals such as physicians, engineers, psychologists, sociologists, industrial designers, and others (Karwowski, 2012). The relevance of Ergonomics' lies in that it is focused on the design of products, systems and environments that will cater for human beings' capacities and limitations, thus guaranteeing an effective man-environment integration (Álvarez-Zárate, 2013).

Ergonomics is a science that seeks to achieve balance among work environment, tools, tasks and human beings. It is supported by other disciplines such as engineering as well as other physical, biological, social, and human behavioral sciences (Fernandez et al., 2010). In the industrial sector, Laos et al. (2007) describes Ergonomics as the science responsible for adapting the work to the worker. Its goal is to adequate space, products and systems to people's capacities and needs (Harne & Deshmukh, 2016). Today, corporations are leaning on ergonomics to design *programs* that will decrease or eliminate the risk of musculoskeletal disorders in workers. Such programs will yield benefits such as lowering the costs generated by workers' absences due to sick leaves (Fernandez et al., 2010; Haines & Wilson, 1998). On the other hand, when employees feel uncomfortable or unsafe, conditions such as dissatisfaction, lack of motivation, staff rotation, low productivity, and accidents are likely to occur (Portillo, Gomez, Palacios & Gutierrez, 2009). For all these reasons, implementation of Ergonomics is of utmost relevance within corporations.

PROBLEM STATEMENT

In the twenty-first century, knowledge management is a key topic for companies as it allows them to grow and increase their profit margins (Harrington & Voehl, 2007). Thus, companies have increasingly recognized the value of knowledge management (Yew Wong, 2005). Furthermore, they have placed knowledge management as an essential element to improve and maintain competitiveness in the market (Yew Wong, 2005). Today, success factors are considered part of knowledge management (Alazmi & Zairi, 2003). According to Bullen & Rockart (1981), Critical Success Factors (CSFs) are defined as those key activities in a process, which are necessary for objectives to be reached. Likewise, Gauthier & Lagacé (2015) emphasize that critical success factors are the key elements that make the difference between success and failure in projects.

Currently, it is a common view that companies pursuing competitive advantage need to improve their performance by providing more human-compatible working systems, which results in a decrease in health and safety problems (Fernandez, Marley, Noriega, & Ibarra, 2010). Ergonomics is a good way to provide compatibility between human and working systems. Regarding the CSF concept, several authors have identified factors that lead to a successful implementation of Ergonomics. For example, the management's commitment, rewards to workers, communication and feedback on tasks delivered, and training are all CSFs that contribute to a safe work environment (Vredenburgh, 2002). In addition, investigations have found some benefits of Ergonomics such as a more comfortable work environment,

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a decrease in the accident rate, chronic fatigue, and the related costs of waste and rework, an increase in morale, productivity and good product quality (Beevis, 2003; Rajanen, 2003; Rensink & van Uden, 2006).

One of the principles of knowledge management establishes that all the tools and knowledge needed to make decisions can be available for managers (Flouris & Oswald, 2006). Thus, this research presents the development and validation of a questionnaire as a tool to determine the critical success factors involved in the decision-making regarding ergonomics implementation. The importance of this questionnaire lies in that, through its application, companies will be able to increase their knowledge regarding employees' perception of how Ergonomics is being implemented within the company. It will also allow managers and researchers to see trends in the data and make useful inferences from them. In addition, the results can be used to perform mathematical and structural models between the effects of critical factors, their costs and their benefits. Finally, the critical factors can be of use in spreading results for the elaboration of manuals or in guiding Ergonomics implementation.

OBJECTIVES

The main goal of this research is to design and validate a questionnaire for the critical success factors (CSF) and benefits of Ergonomics programs in the exporting manufacturing industry. The aim of the questionnaire is to collect information regarding the critical factors and the benefits resulting from the implementation of Ergonomics programs.

SCOPE AND BOUNDARIES

The questionnaire was applied to personnel from the exporting manufacturing industry in Ciudad Juarez, Chihuahua in order to be validated. This city is one of the top ten manufacturing cities in Mexico. The city holds the first place in the generation of industrial jobs per capita and it is responsible for 20% of the nation's employment rate. In addition, the industry established in Ciudad Juarez contributes with 1.8% to the country's Gross Domestic Product (GDP), with sales averaging nine billion dollars a month and with 7 billion dollars in monthly imports (*Municipal Institute of Planning*, Instituto Municipal de Planeación, 2014). In addition, it hosts 310 industrial manufacturing companies (INEGI 2010, *Municipal Institute of Planning* 2014, Ministry of Labor and Social Security 2014). This industry is the fourth place nationally in employment generation, occupying 250,577 people (INEGI 2010, *Municipal Institute of Planning* 2014, Ministry of Labor and Social Security, 2014).

About the sample, it comprises only middle and senior managers, as they are key elements in the development and performance of organizations. They possess knowledge about the companies' financial aspects and are responsible for achieving main goals. The questionnaires were administered between May and October 2016. Moreover, while this research focuses on identifying the CSFs, and their resulting benefits, it does not attempt to make recommendations regarding how to establish or implement an Ergonomics program. Instead, it suggests resorting to the professional advice of an ergonomist, a consultant or a specialist in the field.

Regarding the constraints posed by the industries, the confidential nature of the information made the administration of the questionnaire difficult as it restricted the size of the sample; however, the intentional sampling method was used during the investigation to attain an acceptable sample size. Furthermore, in

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every research there may be errors or falsehoods in the interviewee's response, mainly for two reasons: respondents are unable to give a reliable or valid answer, or they may wish to give a wrong answer (Chica & Costa, 2006). In this manner, procedures for reliability testing of questionnaires are highly recommended. Regarding the participants, they responded to the questionnaire on a voluntary basis and were asked to fill out the questionnaire as honestly as possible. They also signed the due consent so that reliable indicators could be obtained.

LITERATURE REVIEW

Ergonomics Program

According to the Occupational Health and Safety Administration and the American Apparel and Footwear Association (2007), most companies have heard about Ergonomics. However, there is a need for a more complete view of Ergonomics implementation; therefore, it is necessary to learn more about this science and the added value it brings to the operation. The objective of the ergonomist is to develop systems and products that may increase productivity, and minimize the risk of injury and illness in workers (Fernández et al., 2010). It is important that companies design and make programs improve working contidions to prevent workers from being injured (Portillo, Gómez, Palacios & Gutiérrez, 2009).

One of the ways companies have implemented Ergonomics has been through Ergonomics programs constituted by a multidisciplinary team (Snook, 1993 cited by Bolis & Sznelwar, 2016). Implementation of such programs requires of effective planning material, human and economic resources. Several authors have described the methodology that must be carried out in order to implement Ergonomics.

According to Joseph (2003), an Ergonomics program needs to be constantly reviewed and updated. Also, Joseph (2003) identifies the following conditions for improvement:

- Participants ought to receive advanced ergonomics training.
- The ergonomics committee needs to communicate ergonomics. The success of the implementation of Ergonomic lies in a reactive and pro-active vision.
- Participants need to constantly review and improve the process.

The Ohio Bureau of Workers' Compensation (2002), describes that in order to establish an ergonomics program, it is necessary to have the directors' commitment as this will provide the necessary resources to ensure the program's success.

Additionally, Stuart-Buttle (2006) explains that management's commitment and employee participation are essential elements for the implementation of an ergonomics program and when companies present considerable amount of work-related medical cases, it would be important to emphasize this component early in the program's development. Another important activity involved is education about ergonomics at the beginning of a training plan. Finally, once Ergonomic training and education are completed, it would be important to establish an effective system to evaluate the new designs and continuous improvement.

Figure 1 shows a diagram of the elements in an Ergonomics process from the perspective of a small company.

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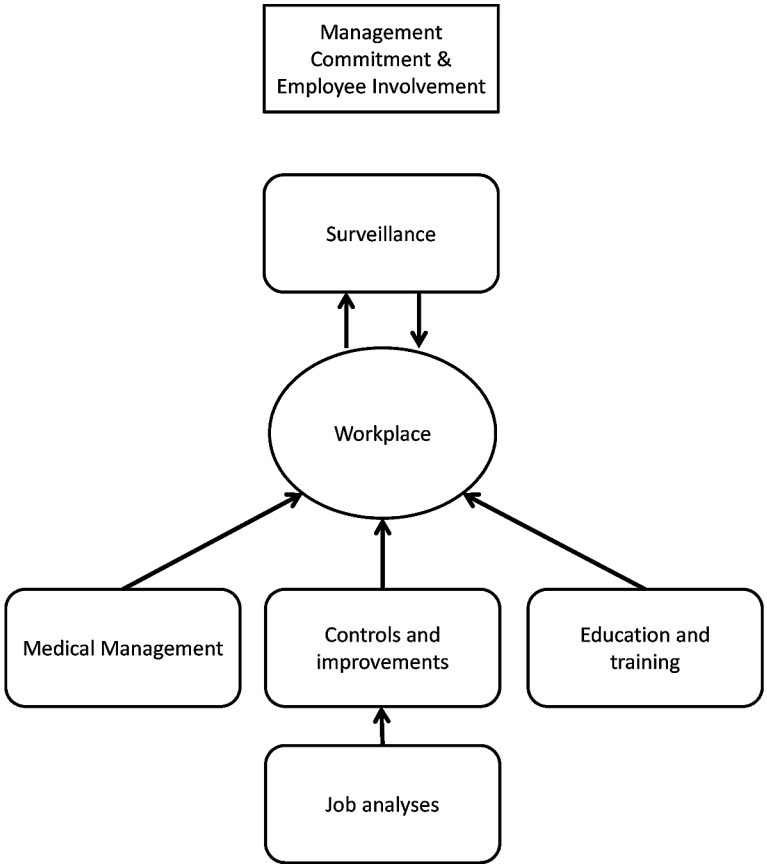
Figure 1. Diagram of elements in the Ergonomics process
Source: Stuart-Buttle (2006).



Critical Success Factors for Ergonomics in Industry

Globalization, foreign competition, challenges and changes in technology have affected companies. To stay in the market, many companies have needed to look for information. This information should be simple and clear to help managers in planning and making decisions (Bullen & Rockart, 1981 cited by Lehman & Ruzich, 2016). Similarly, critical success factors provide concise and useful information for these purposes aswell (González & Rodenes, 2007). The following lines present critical factors or key elements for the implementation of Ergonomics in organizations:

- OSHA has identified several factors that influence the correct implementation of Ergonomics; among them are: Management support; Workers' involvement; Training; Problem identification; Early notification of musculoskeletal disorders; Implementation of solutions to control the risks; and Progress evaluation (Occupational Health & Safety Agency, n.d).
- Ip & Rostykus (2014) indicate five key elements: Target cause, Common goal, and Top down approaches. Additionally, accomplish a Familiar system by means of Regular checks.

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- Payne (2003) explains that the most important factor is workers' commitment. In addition, the same author describes activities to involve workers, for example training, observation and feedback, review of new designs, evaluation of work areas, check the stations and participation in problem solving.
- Alexander & Orr (2006) made a list of success factors that will make an Ergonomics program effective.The study integrates four groups of critical factors:
  - Know the needs of the business.
    - Emphasize business objectives.
    - Avoid too many low value or high cost solutions.
    - Ensure that ergonomics evaluates projects.
    - Maintain tabulation of project costs.
    - Use resources efficiently.
  - Avoid common traps.
    - Identify and overcome barriers.
    - Support training with adequate infrastructure.
    - Avoid the use of "ergo-interference".
  - Create a strong purpose.
    - Be clear about the purpose of the Ergonomics program.
    - Plan the stages of the culture change towards Ergonomics.
    - Create a strategic plan.
  - Maintain the program.
    - Understand the difference between an Ergonomics program and the practice of Ergonomics.
    - Create a tactical plan.
    - Ensure regular quantitative evaluations of the overall ergonomics program.
    - Do not wait for the top management to let the program down.
    - Maintain political support.

Accordingly, the authors describe that critical success factors are activities that can support companies in prioritizing, planning, and managing and allocating resources. However, there is no consensus among success factors.

Benefits of an Ergonomics Program

According to the authors, an Ergonomics program in industry results in greater employee empowerment in the activities they do, increased learning, and an easier acceptance of changes (Hägg, 2003; Vink, Koningsveld, & Molenbroek, 2006 cited by Bligård et al., 2014). Some of the benefits that authors have identified are explained in the following paragraphs.

- Rensink & van Uden (1999) outlined 41 benefits, classified in 8 main areas: 1. organization, 2. maintenance, 3. reliability, 4. safety, health, 5. environment, 6. legislation and 7. staff turnover. The Rensink & van Uden (1999) study was carried out at a petrochemical plant.
- In their study, Rodríguez & Díaz (2007) found that a safe working environment leads to employee motivation and the latter affects productivity. Thus, a motivated employee works more efficiently.

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- The main benefit established by managers is the reduction of health problems (Jenkins & Rickards, 2001 cited by Dul & Neumann, 2009).

Consequently, the authors have classified benefits according to different perspectives: organization, health, safety, environment, legislation and personnel rotation.

Questionnaires for Safety and Ergonomics

One of the most important resources that are available for research are questionnaires (Hague, 2006). These instruments are commonly used to collect information about a phenomenon (García, 2004; Hernández-Sampieri, Fernández-Collado, & Baptista-Lucio, 2010). Also, they help to measure one or more variables mainly by means of questions (Hernández-Sampieri et al., 2010). The success of a questionnaire depends on the accuracy and easiness of responses. In addition, seven steps must be followed in order to carry out a questionnaire effectively (Hague, 2006):

1. Decide what information to bring.
2. Make a list of the partial questions to be asked.
3. Redefine the planned questions.
4. Make an appropriate format for the questions to be planned.
5. Order the questions.
6. Complete the integral design of the questionnaire.
7. Present and review.

Some authors have used questionnaires to detect problems in aspects of safety and Ergonomics:

- Portillo et al., (2009) conducted a survey with 13 questions through which they detected factors that cause accidents and injuries in the workplace. The factors discovered were related mainly to environmental ergonomics (lighting, noise, temperature and vibration). The instrument was applied in an automotive manufacturing company. The results of the survey indicate that the factors that cause a greater number of accidents are lack of guards (57%), distraction of operators (40%) and lack of training (30%).
- DePasquale & Geller (1999) conducted a questionnaire to measure employees' perceptions of safety, trust in management, accountability, participation in training, and tenure with the organization. In the study, they observed that companies that required employees to participate in safety issues reported increased participation, trust between management and colleagues, work satisfaction and positive behavior.
- Azadeh, Mokhtari, Sharahi, & Zarrin (2015) carried out an investigation to determine relationships between decision styles and the failure of decision making in risk situations. To demonstrate the model, they used a questionnaire which covered aspects such as health, safety, environmental and ergonomic problems. The instrument was administered to operators of an oil refinery. The end result was a model that proposed that successful decision-making was achieved when the best operator was involved in consensus with a team. In addition, the authors stated that this was the first study to identify decision-making styles regarding ergonomics, safety and hygiene factors.

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In previous investigations, the authors highlight the usefulness of a data-collection instrument and the methodologies for determining factors. In the present investigation, the questionnaire is an important tool for critical success factors determination and benefits of Ergonomics implementation.

METHODOLOGY

This section describes the methodology that will be carried out throughout this research. Based on the information regarding critical success factors and the benefits of Ergonomics programs proposed by different authors, a questionnaire was devised to gather reliable information in order to determine CSFs from the perspective of the exporting manufacturing industry. The following aspects, described by Martín-Arribas (2004), were considered in order to develop the questionnaire:

1. Definition of the constructs or aspects to be measured
2. Purpose of the scale
3. Composition and number of questions
4. Content (dimension assessment)
5. Definition and ranking
6. Bias prevention
7. Codification of answers
8. Question scoring
9. Validation process

RESULTS

The following results were obtained based on the aspects recommended by Martín-Arribas (2004) for the Questionnaire development and validation.

Definition of the Constructs or Aspects to be Measured

When developing instruments such as questionnaires, the literature review is always the starting step in order to define the variables to be measured. The goal is that the variable (construct) can be defined properly. Table 1 shows a list of the main success factors described by authors. As can be observed, factors such as management commitment, involvement of the operating staff, training and providing feedback of ergonomic process are frequently mentioned in literature. Additionally, conducting risk analysis, implementing solutions, designating a committee and ensuring communication are found to be important factors for a successful implementation of Ergonomics in companies.

Table 2 presents a list of benefits of adopting an Ergonomics program. The authors as one of the main benefits of Ergonomics recognize a reduction in the rate of accidents, injuries or work diseases.

In addition, a reduction in the rate of employee compensation, the elimination/reduction of employees' physical/mental stress, and a decrease in waste and rework are frequently mentioned in literature. Increment in productivity, participation and employee morale throughout the organization can be considered as companies' most wanted benefits as well.

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Table 1. Critical success factors involved in the adoption of an Ergonomics program

Critical Factors	Author																Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
Recording all costs which result directly from the lack of Ergonomics									x				x	x		x	4
Decreasing work conditions-related complaints									x								1
Decreasing human errors									x				x				2
Management commitment	x	x	x	x	x	x	x		x	x	x	x	x		x	x	14
Appointing resources			x	x		x			x	x	x				x		7
Designating a committee		x	x	x	x	x	x		x	x					x	x	10
Involving the operating staff	x	x	x		x	x	x	x	x	x	x	x			x	x	13
Establishing a work plan/ objectives			x	x	x				x	x					x		6
Ensuring communication		x	x	x		x	x		x	x	x	x	x		x		10
Providing training	x		x	x	x	x	x	x	x	x	x	x	x		x	x	14
Promoting the program				x										x			2
Identifying areas at risk because of lack of ergonomics	x		x	x	x	x	x	x	x	x	x	x			x		11
Conducting a risk analysis	x		x	x	x	x	x	x	x	x	x	x			x		12
Implementing risk solutions	x	x	x	x	x	x		x	x	x	x	x			x		12
Conducting a cost analysis of solutions				x										x			2
Comparing financial benefits with accidents rate	x		x	x				x	x					x			6
Continuing to follow up on the program	x		x	x					x	x	x	x	x				8
Providing feedback	x	x	x	x	x	x		x	x	x	x	x	x		x		13
Rewarding workers											x						1

List of authors: 1.Occupational Health & Safety Agency (n.d.); 2. Institute for Work & Health (2008); 3.Reich (1993); 4. Liker & Chaffin (1984); 5. Rensink & van Uden (1999); 6.Bolis & Sznelwar (2016); 7. Occupational Safety and Health Association & American Apparel and Footwear Association (2007); 8. Occupational Safety and Health Association Oregon (2013); 9. Occupational Safety and Health Association (2013); 10. Gadea et al. (2015); 11. Vredenburgh (2002); 12. Bridger (2003); 13. Tappin et al. (2016); 14. Hendrick (2003); 15. Yazdani et al. (2015); 16. Donovan, Khan, & Johnston (2016)

Purpose of the Scale

This section defines the questionnaire's target sector as well as the administration procedure and format. According to the National Council of the Manufacturing Industry of Exports (Consejo Nacional de la Industria Maquiladora de Exportación A.C., n.d.), the manufacturing industry provides1.8% of the Gross Domestic Product and generates a monthly average of 9 million dollars, which is an important reason for the interest in this sector.

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Table 2. Benefits of adopting an Ergonomics program

Benefit	Author							Total
	1	2	3	4	5	6	7	
Reduction in the rate of accidents, injuries or work diseases	x	x	x	x	x	x	x	7
Reduction in the rate of employee compensation	x		x		x	x	x	5
Improvement of hygiene at work (toxicity, noise, etc.) and reduction of energy consumption	x		x				x	3
Reduction / elimination of employees' physical / mental stress	x	x				x	x	4
Increased level of comfort in environmental conditions	x		x					2
Savings on cleaning costs	x							1
Reduction in the probability of environmental incidents	x							1
Reduction in the number of environmental complaints	x							1
Discomfort reduction	x						x	2
Increase in the participation and morale throughout the organization	x	x	x				x	4
Increase in employees' motivation and skills	x	x						2
Increase in positive attitude of managers and in employees' self-esteem	x	x					x	3
Increase in the amount of employees satisfied with their work		x						1
Increase in market competitiveness		x						1
Increase in the knowledge and experience applicable to problem solving		x						1
Increase in teamwork		x						1
Increase in promotion possibilities	x	x					x	3
Improvement in the performance of older / ill staff	x							1
Improvement in product quality and equipment maintenance	x					x	x	3
Reduction in errors	x					x		2
Efficient use of work time	x					x		2
Increase in productivity		x	x	x	x		x	5
Decrease in lost days due to accidents, injuries or occupational diseases	x				x		x	3
Reduction of waste and rework	x			x	x	x	x	5
Improvement of Company's image / reputation	x							1
Prevention / Reduction of Warnings / Sanctions by Authorities	x							1
Investment recovery and reduction in delays	x				x			2

List of authors: 1. Rensink & van Uden (1999); 2. Occupational Safety and Health Association & American Apparel and Footwear Association (2007); 3. Occupational Safety and Health Association Oregon (2013); 4. Stanton & Baber (2003); 5. Goggins, Spielholz, & Nothstein (2008); 6. Joseph (2003); 7. Munck-Ulfsfält, Falck, Forsberg, Dahlin, & Eriksson (2003).

The questionnaires were administered digitally through the use of Survey Monkey and Google Forms. They were administered in printed form as well. The questionnaire's format was devised following the stages suggested by Liker & Chaffin (1984). Figure 2 shows the stages corresponding to Ergonomics implementation.

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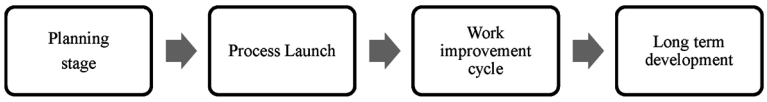
Figure 2. Stages for the implementation of an Ergonomics program
Source: Liker & Chaffin (1987).



Composition and Number of Questions

This section refers to the questions or items under each construct (which is a variable that cannot be measured directly). This section includes the type of question to be used and whether questions will be open or closed-ended. The latter ones were chosen, since answers can be either specifically selected or scale-based (Hague, 2006) and because they fulfill the purpose of measuring the frequency of activities and practices for CSF determination. Finally, the number of questions under each construct must be at least between 3 and 4 questions (Martín-Arribas, 2004). Table 3 shows the stages, the constructs and the number of questions making up each construct.

Table 3. Questionnaire's composition

Stage	Construct	Number of Questions
1. Planning Stage	Planning costs	5
	Prevention activities	5
	Work environment	6
	Management's commitment	6
2. Process Launch	Organization	5
	Work training	5
	Project launch costs	5
3. Work Improvement Cycle	Identification of work priorities	5
	Risk assessment	5
	Solution development	6
	Cost of implementation	5
4. Long-Term Development	Project's cost-benefit analysis	5
	Follow up on health and safety	5
	Feedback	5

Content (Dimension Assessment)

This section refers to the content of the questionnaire where the researcher defines whether he will evaluate a single dimension (unidimensional) or several (multidimensional). In the case of this questionnaire, the content is multidimensional since several dimensions are evaluated.

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Definition and Ranking

As for the formulation and arrangement of each question, Arribas (2004) offers some suggestions regarding the construction of questions.

Bias Prevention

Bias prevention is related to the avoidance of tendency-causing errors such as: locating the answers in the center, responding on the basis of what is known as socially acceptable, responding based on previously given answers and finally giving an equal score on all questions.

A consent form was given to the participants so that they could answer the questionnaire in all liberty and assurance. In such form, the respondents are assured that their participation is voluntary, that the answers obtained will be used for academic purposes only, and that all the information that they share will be anonymous.

Codification of Answers

This refers to the type of responses, which can be dichotomous: Yes or No, or True or False; Polychotomous: I am discontented with myself / I do not value myself / I hate myself / I am satisfied with myself; and analogy questions: using scales. Analogy questions were chosen in this case. A score on the Likert scale will be given in order to measure the frequency with which activities are performed.

Question Scoring

This aspect refers to the scoring system, which can be simple or weighted. Simple scoring is obtained through the sum of the correct answers or the sum of the values given to each option. The weighted score or weighted questions refer either to when the value of each answer option vary or the correct questions differ in their value.

With regards to the scoring, simple scoring was selected. Table 4 shows the Likert scale used to answer the questions. This type of scale has been used satisfactorily in other studies (Aromaa & Väänänen, 2016; Yeow & Nath Sen, 2003). In this case, a 1-5 Likert scale was used to measure the frequency of the activities for Ergonomics implementation.

Table 4. Likert scale of the instrument

Value	Frequency of Activities
1	Never
2	Almost never
3	Sometimes
4	Frequently
5	Always

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Validation Process

In this step, Martín-Arribas (2004) suggests conducting a pilot test and an evaluation of the metric properties of the instrument. First, experts who, based on their experience, agreed about the appropriateness of the instrument, questions and scale (Aguirre, 2003 quoted by Vargas-Porras & Hernández-Molina, 2010) performed the validation. For this study, the following actions were performed:

1. The phrasing and the structure of questions were reviewed by three Ph. D degree research professors from the Universidad Autónoma de Ciudad Juárez (Autonomus University of Ciudad Juarez).
2. The content and clarity of the questionnaire, as well as other suggestions were made by experts. One member of the SEMAC (Mexican Association of Ergonomists), two researchers from the Instituto Tecnológico de Sonora (Technological Institute Of Sonora), three college Ergonomics professors from the Autonomus University of Ciudad Juarez and one safety and health consultant with more than 10 years of experience participated in this step.

After a very meticulous review process, corrections were made, and a final version of the questionnaire was drafted for its application.

Pilot Test

A pilot test was performed on a sample of 140 participants using the intentional sampling method according to (De Souza-Lauretto, Nakano, Bragança-Pereira, & Stern, 2012). Missing values were replaced by the median value of the sample according to (Garcia-Alcaraz & Maldonado-Macias, 2016).

Out of those 140 participants, 85% work in the automotive sector, while 12.14% belong to the electrical and electronics sector. These results are shown in Table 5. In addition, the participants' positions results are shown in Table 6.

Table 5. Participants by industrial sector

Sector	Participants	Accumulated Percentage
Automotive	119	85.00%
Electronics	17	12.14%
Home appliances	1	0.71%
Plastics	1	0.71%
Pipe and Hose Systems	1	0.71%
Telecommunications	1	0.71%
Total	140	100.00%

Table 6 shows that participants in an engineering position make up a total of 46.38%, which is highly important due to the interaction they have with Ergonomics.

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Table 6. Participants by position in the company

Job	Participants	Accumulated Percentage
Engineer	64	46.38%
Technician	17	12.32%
Supervisor	15	10.87%
Intern	10	7.25%
Manager	7	5.07%
In charge	6	4.35%
Assistant	5	3.62%
Analyst	3	2.17%
Buyer	3	2.17%
Storer	2	1.45%
Coordinator	2	1.45%
Controller	1	0.72%
Designer	1	0.72%
Coach	1	0.72%
Glider	1	0.72%
Total	138	100.00%

Table 7. Validation of the elements included in the questionnaire

Element	Number of Questions	Cronbach's Alpha
Planning Costs	5	0.733
Prevention Activities	5	0.829
Work Environment	6	0.844
Management's Commitment	6	0.862
Organization	5	0.911
Training	5	0.815
Project Launch Costs	5	0.889
Job prioritizing	5	0.871
Risk Assessment	5	0.828
Solution Development	6	0.867
Implementation Costs	5	0.828
Project's Cost-Benefit Analysis	5	0.882
Follow-up on Health and Safety	5	0.871
Feedback	5	0.885
Health and Safety Benefits	11	0.933
Benefits in the quality of life at work	15	0.983
Operational Benefits	16	0.977

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Elements, number of questions and results of the reliability index are shown in Table 7. The average Cronbach's alpha value index for all elements of the questionnaire was 0.985, which exceeds the minimum acceptable value based on George & Mallery (1995). In this manner, a value greater than 0.9 is excellent, one greater than 0.8 is good, one greater than 0.7 is acceptable, one greater than 0.6 is questionable, one greater than 0.5 is poor, and one lesser than 0.5 is unacceptable. Also, Gliem & Gliem (2003) indicate that a Cronbach's alpha index value greater than 0.8 is a good score. Based on these results, the questionnaire can be a reliable instrument for gathering data for knowledge management of the critical success factors for Ergonomics implementation in manufacturing systems.

CONCLUSION AND RECOMENDATIONS

As conclusions, the questionnaire was successfully developed on CSFs determination and the benefits of Ergonomics implementation. So far, no single questionnaire had been found which combined knowledge management of the success factors with the benefits of Ergonomics. Additional conclusions can be made.

- The questionnaire results show employees' perceptions regarding the way Ergonomics is being carried out within the company.
- The questionnaire allows data collection in order to conduct a statistical analysis and inferences.
- For researchers, the instrument represents a tool to develop mathematical and structural models that combine the effects of critical success factors, their costs and their benefits.
- The results of the questionnaire allow companies emphasize on those activities that truly contribute to the success of Ergonomics implementation and the enjoyment of its benefits.

The following recommendations are given for future researchers and interested parties:

- Include, eliminate or design questions that might improve the reliability index value (Cronbach's alpha) of the constructs in new versions of the questionnaire.
- Administer the questionnaire in a greater number of companies either within Mexico, the United States or other regions.
- Develop models through structural equations in order to explore relationships between constructs.
- Spread the procedures and the CSFs so that more companies implement Ergonomics and enjoy the benefits it brings to the employees, companies and their clients.

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APPENDIX

This appendix contains the Questionnaire to determine the Critical Success Factors and Benefits of the application of Ergonomics in the manufacturing industry in Ciudad Juarez.

The content of the questionnaire was integrated by four sections: consent, general information, critical activities, and benefits. The consent explains to the participant that all answers are confidential, including the company's name and that the results will be reported on anonymously and for academic purposes only. The items in the general information are:

- Company sector where the interviewee works
- Position
- Gender
- Salary (monthly)
- Years of experience in his/her position

The third section is the questionnaire. According to the results of the methodology, the questionnaire uses a Likert scale that measures the frequency of activities and is formed by four stages in and three benefits of the Ergonomics program. In addition, Tables 8, 9, 10 and 11 present the critical activities of each of the stages, while Tables 12, 13 and 14 show the benefits.

Table 8. Critical activities of the planning stage

Planning Stage	**Scale (1-5)**
Indicate how frequently the following activities for the implementation of Ergonomics are carried out in the company.	
Planning Costs	
Records are kept and costs are considered in regards to:	
01. Employees' work-related leaves of absence, accidents, injuries or illnesses	
02. Absences of employees on sick leave due to work-related causes	
03. Medical care (internal and external, including specialized care) due to work-related injuries or illnesses	
04. Fines by Social Security, the Ministry of Labor or other agencies	
05. Training of the new employees who replace those injured and/or on sick leave due to work-related accidents or diseases	
Prevention Activities	
06. Creation of adequate and comfortable work conditions for the employees	
07. Appointing employees to a site, area or workstation to accommodate their capabilities and limitations	
08. Arranging the purchase of adequate and safe machines and tools to accommodate the employees' capacities and limitations	
09. Regular medical evaluations of the company's employees	
10. Rest times are scheduled according to the employees' mental and physical weariness resulting from the activities they perform	
Work Environment	
11. Decrease in complaints related to work conditions	

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Planning Stage	Scale (1-5)
12. Improvement of the plant's layout	
13. Identification of ergonomic risk factors in the work environment	
14. Analysis of the implementation of automation in operations which are risky for humans	
15. Decrease in human errors during tasks	
16. Identification and reduction of the task information burden	
Management's Commitment	
17. Frecuency of the Directors' commitment	
18. Encouragement of employee-manager relationships	
19. Appointment of resources to avoid work disabilities, accidents or injuries	
20. Compliance with the regulations and the Law in Mexico	
21. Strengthening of competition in the market	
22. Compliance with new Ergonomics standards (proactive approach)	

Table 9. Critical activities of the process launch

Process Launch	Scale (1-5)
Indicate how frequently the following activities for the implementation of Ergonomics are carried out in the company	
Organization	
23. Development of a work plan for the person or group (committee) in charge of Ergonomics	
24. Documenting of the activities carried out or write Minutes (in the case of a committee)	
25. Implementation of a work plan for the person or group (committee) in charge of Ergonomics: Activities to ensure communication between the person or group (committee) in charge of Ergonomics:	
26. and the management	
27. and the employees	
Training	
Training activities in:	
28. Topics only, (without explaining any real cases)	
29. Real case studies with the person or group in charge of Ergonomics	
30. The writing of Ergonomics manuals or guidelines	
31. The use of Ergonomics-specialized computer programs	
32. Conducting post-training assessments of Ergonomics	
Project Launch Costs	
Records are kept and costs are considered regarding:	
33. The promotion of the Ergonomics program in the company	
34. The time to hold meetings	
35. Buying Ergonomics-specialized software	
36. Training in the use of specialized software	
37. The teaching and training in Ergonomics topics (congresses, specializations, master's and PhD degrees, etc.)	

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Table 10. Critical activities of the work improvement cycle

Work Improvement Cycle	Scale (1-5)
Indicate how frequently the following activities for the implementation of Ergonomics are carried out in the company.	
Identification of Priority Work	
Priority is given to those departments or stations where:	
38. Employees make repetitive movements in non-neutral postures, extreme temperatures or vibration	
39. There is a higher rate of accidents, injuries and / or occupational diseases	
40. Based on the recommendations of the medical services	
41. There are new processes, materials, equipment, tools and workstation.	
42. Based on comments and employee involvement	
Risk Investigation	
Risk identification by means of:	
43. Tours	
44. Use of questionnaires	
45. Interviews	
46. Analysis by an Ergonomics method (REBA, RULA, OWAS or others)	
47. Use of Ergonomics-specialized software such as Ergonomics Analysis, Jack and Process Simulate Human, among others	
Solutions Developments	
Solutions are developed by:	
48. Person in charge or the Ergonomics group and employees' opinions	
49. Person in charge or the Ergonomics group and area manager	
50. Use of Ergonomics-specialized software	
51. Research (scientific articles, internet files, etc.)	
52. Person in charge and experts (consultants, ergonomics or university experts)	
53. Compilation of ideas and information by comparing aspects within or outside the company (Benchmarking)	
Implementation Costs	
Records are kept and costs are considered:	
54. For the purchase of tools	
55.To buy equipment or machines (either automatic or semi-automatic)	
56. By an expert (consultant, ergonomist, universities, etc.)	
57. When a line or station stops because a finding has been detected	
58. For the purchase of software to identify solutions	

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Table 11. Critical activities of long-term development

Long-Term Development	Scale (1-5)
Indicate how frequently the following activities for the implementation of Ergonomics are carried out in the company.	
Cost-Benefit Analysis of the Project	
59. Feedback is given to the directors to keep investing in the Ergonomics program	
60. Total investment is compared to the benefits obtained by the program	
61. Records are kept, and the costs associated with implementing the entire project are considered.	
62. Records are kept and costs are considered regarding the Production System before and after the completion of the project	
63. Records are kept, and the costs associated with internal medical care after implementation of the program are considered	
Health and Safety Follow-Up	
Activities are developed to:	
64. Follow up on the culture of prevention	
65. Follow up on ergonomics risks	
66. Follow up on ergonomics risks whose solution has not been completed	
67. Promote the prevention of accidents, injuries or occupational diseases	
68. Compare the rates of accidents, injuries or work diseases before and after implementing the program.	
Feedback	
Activities are carried out to provide feedback regarding the solutions to risks in ergonomics to:	
69. The entire corporate	
70. Employees	
71. The person(s)in charge of helping to solve the problem	
72. The manager of the department affected by ergonomic hazards	
73. The directors regarding the performance of the Ergonomics program	

Table 12. Health and safety benefits

Health and Safety Benefits	Scale (1-5)
Indicate how frequently you consider that some of the following benefits in the company have been obtained	
1. Reduction in the rate of accidents, injuries or work diseases	
2. Reduction in employees' compensation rate	
3. Decrease in employee fatigue	
4. Improvements in hygiene at work (toxicity, noise, etc.)	
5. Reduction / elimination of employees' physical / mental stress	
6. Increase in the comfort level of environmental conditions	
7. Savings in the company and machinery's cleaning costs	
8. Reduction in soil / water / atmosphere pollution	
9. Reduction in the probability of environmental incidents	
10. Reduction in the consumption of electric energy in the company	
11. Reduction in the number of environmental complaints	

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Table 13. Benefits in the quality of life at work

Benefits in the Quality of Life at Work	Scale (1-5)
Indicate how frequently you consider you have obtained some of the following benefits in the company	
1. Increase in the employees' morale	
2. Reduction in employees' discomfort	
3. Increased participation throughout the organization	
4. Increase in employees' motivation	
5. Increase in managers and employees' positive attitude	
6. Increase in employees' self-esteem	
7. Increase in employees' skills	
8. Increase in the number of employees satisfied with their work	
9. Increase in director-employee communication	
10. Increase in market competitiveness	
11. Increase in the knowledge and experience applicable to problem solving.	
12. Increase in teamwork	
13. Increase in the possibility of employee promotions	
14. Prevention of compensation claims and the related internal debate	
15. Improvement in the performance of older / sick staff	

Table 14. Operational benefits

Operational Benefits	Scale (1-5)
Indicate how frequently you consider you have obtained some of the following benefits in the company	
1. Increase in competitiveness	
2. Improvement in product quality	
3. Reduction in employees' absenteeism because of accidents, injuries or occupational diseases	
4. Reduction in product manufacturing errors	
5. Reduction in lost days due to accidents, injuries or occupational diseases	
6. Increase in productivity	
7. Efficient use of working time	
8. Scrap reduction	
9. Reduction in the cost of employees' internal medical care	
10. Reduction in materials transportation	
11. Reduction in monotony	
12. Prevention of damage / risks of the company's premises	
13. Increase in the quality of equipment maintenance	
14. Improvement of the company's image / reputation	
15. Prevention / reduction of warnings / sanctions by the authorities	
16. Reduction in delays	

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Chapter 24
Knowledge Management of Work Stress in Mexican Manufacturing Environments:
Models of the Relationships Between Burnout and the Body Mass Index Among Middle and Senior Managers

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ABSTRACT

This chapter presents a knowledge management perspective to propose a pair of structural models to determine the relationship between burnout syndrome (BS) and body mass index (BMI) among high and middle managers of Mexican maquiladoras. In developing countries like Mexico there are opportunities to expand burnout study on diversity of contexts and occupations. The Maslach burnout general inventory questionnaire (MB-GI) was used, and sociodemographic data were collected as well as the weight and size of respondents. Instrument shows an acceptable reliability index. Structural equation models are used to determine relationship among variables. From a sample of 361 people, using segmentations of BMI, two segments are distinguished: normal weight and overweight. Model using normal weight participants shows more explanatory qualities about the relationship among burnout dimensions than the one using overweight participants. One can conclude that more factors and variables are needed to explain overweight Mexican managers.

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INTRODUCTION

The concept of Burnout Syndrome (BS), was first introduced by Bradley 1969. BS directly affects individuals and is characterized by excessive and progressive fatigue, energy depletion, and motivation loss. Also, according to Freudenberger (1998), BS affects attitudes, modals, and behaviors in general, which is why it is important to study it. Likewise, as Gonzales and Guillermo (2009) argue, research on BS first appeared in 2000. Since then, many studies have been conducted across industrial sectors. For instance, Medellin (2008) reported a study of BS in the automotive industry, whereas Aguirre, Medellín, Vázquez, Gutiérrez, and Fernández (2014) reported the effects of this syndrome in the assembling industry. Likewise, Aranda and Ibarra (2014) discuss BS in the electronics industry.

According to Llaneza (2002), it has been demonstrated that the prevalence of work-related diseases or multi-causal diseases – especially those related to stress – increases exponentially in developing countries. In their model, Serrano, Moya-Albiol & Salvador (2009) prove that occupational stress is at the adaptive stage in human beings. When the adaptive response is not positive, chronic stress appears, along with BS. Both stress and BS are considered to be pathological conditions. In Mexico, BS has been studied only among helping professions, such as nurses, physicians, and teachers (Juárez-García, A., Idrovo, A. J., Camacho-Ávila, A., & Placencia-Reyes, O., 2014), whereas other occupations have been neglected. Although BS research in the industrial context is scarce, it has been demonstrated that BS is present in industrial workers (Camacho-Alamilla, Maldonado-Macías, García-Alcaraz, Hernández-Arellano, 2014; Maldonado-Macías, Camacho-Alamilla, Torres, Alcaraz, Limón, 2015; Armenta-Hernández, Maldonado-Macías, García- Alcaraz, 2015).

The few works studying occupational stress along with BS have found that both conditions are interrelated. Also, Ahola et al. (2012) found that professional efficacy directly reduces overweight, although authors did not find any other relationship between the remaining BS dimensions and stress at work. Similarly, both BS and stress do not seem to be studied together in relation to obesity and overweight, especially in the manufacturing industry. To overcome this limitation, authors (Camacho, Maldonado, García, Palacios & Valenzuela, 2015) proposed a structural equation model associating BS and obesity among middle and senior managers of manufacturing companies in Ciudad Juárez.

PROBLEM STATEMENT

Two mayor aspects were consider in this research, first, the incidence of stress-related disorders in Mexico is increasing; second, available studies on BS have not provided clear results as regards the relationship between BS and the different BMI levels.

According to a study conducted by the International Labour Organization (ILO, 2016), 40% of Mexican workers – that is, 18.4 million people – suffer from stress, and 75% of such people associate their condition to work-related situations. In this sense, stress can represent between 0.5% and 3.5% of losses in a country's (Gross Domestic Product) GDP. Additionally, on a world scale, the WHO stated that while cardiovascular diseases were the first cause of death globally, overweight and obesity were two other major causes.

Health disorders affect an individual's capacity to perform their daily activities, thereby causing low productivity and quality losses, among other repercussions (Forbes, 2011; Marrau, 2009). At the company level, the consequences of health disorders have a negative impact on production costs (Arenas &

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Cantú, 2013; Gestal, 2003; Juno & Noriega, 2004; Valecillo, M., Quevedo, A.L., Lubo, A., Dos Santos, A., Montiel, M., Camejo, & Sánchez, M., 2009; Kim & Han, 2014).

Relationships between BS and overweight or obesity have not been clarified in literature. Authors (Ahola, K., Pulkki-Råback, L., Kouvonen, A., Rossi, H., Aromaa, A., & Lönnqvist, J., 2012) found out that professional efficacy is related to decreasing obesity and overweight, whereas (Nevanpera, N. J., Hopsu, L., Kuosma, E., Ukkola, O., Uitti, J., & Laitinen, J. H., 2012; Proper, Koppes, Meijer & Bemelmans 2013) linked emotional exhaustion to eating disorders and uncontrolled emotions. Similarly, consequences of BS and workplace stress increase the occurrence of cardiovascular, respiratory, and gastrointestinal diseases, among other physical and mental disorders. In addition, the fatality rate among industrial employees increases every year (Ahola, Vaananen, Koskinen, Kouvonen, & Shirom, 2010) and so does the risks of suffering from diabetes, some types of cancers (Dávila-Torres, J., González-Izquierdo, J. d. J., & Barrera-Cruz, A., 2015), and cardiovascular diseases, being the latter the main cause of death globally in 2012 (WHO, 2015). Other studies have related BS with some work related variables; Borda et al (2007) argue that BS can be associated with variables such as the job position and parenthood, other studies claim that such variables are not related to either BS or stress at work (Acosta y Burguillos 2014; Carlotto 2006; De Pablo 2007). In this manner, additional factors can contribute to explaining these conditions and syndromes (Calvo, Sánchez, Rosado & García, 2011). In this sense, the main contribution of this research is to analyze those relationships between Burnout and Body Mass Index to explain in a better way the occurrence of overweight and obesity among senior and middle managers. The dissemination of the knowledge of these relationships among organizations may be helpful to develop organizational strategies for their management and prevention.

Senior and middle managers make important and transcendent decisions. They are responsible for the organizational strategy of the company, have a group of people under supervision, and are directly responsible for what these people do, as well as the impact of their actions on the organization's performance.

OBJECTIVES

General Objective

The objective of this research is to determine the relationship between BS and the Body Mass Index (BMI) for middle and senior managers of the manufacturing industry in Ciudad Juárez.

Specific Objectives

1. To perform a descriptive analysis of the sample.
2. To describe BS prevalence using three forms (average scores, degrees, and levels).
3. To determine the relationships between the BS dimensions and the BMI for senior and middle managers having a normal weight.
4. To determine the relationships between the BS dimensions and the BMI for senior and middle managers having overweight.

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JUSTIFICATION

This research contributes to the body of knowledge on the effects of stress, overweight, and obesity. According to Benevides and Pereira (2006), it is important to have a better understanding of these conditions to improve the quality of life and health of individuals. Determination of the relationships that exist among these variables will offer valuable data on the characteristics of sufferers, and this will support companies in their efforts to implement preventive measures and strategies for the most vulnerable.

To prevent BS, the relationship between BS dimensions and the BMI for both normal-weight and obese participants must be better understood. These findings will help companies involved in this research to improve their knowledge about the prevalence of BS among their employees and not only company performance, but also staff performance, since many authors have described the consequences of BS and overweight at a personal level (Aguayo, C. Vargas, E. De la Fuente, & L.M. Lozano, 2011).

SCOOP AND DELIMITATION

In this research, BS is studied in its three dimensions (emotional exhaustion, depersonalization and low professional efficacy) and the BMI is studied normal weight (18.5-24.9 kg/m^2) and overweight (25-29.9 kg/m^2). Similarly, the sample includes middle and senior managers of manufacturing enterprises, including executives, supervisors, group leaders, manufacturing administrative staff, and office administrators. For such reasons, results found in this research may be valid only for manufacturing companies that have similar organizational structure to the one here discussed.

Sociodemographic variables such as weight, height, gender, age, marital status, number of children, job position, seniority, work schedule, and company name were considered. In addition, as previously mentioned, study was conducted in the manufacturing sector of Ciudad Juárez. According to the association of manufacturers of this city (Asociación de Maquiladoras de Ciudad Juárez-Index Ciudad Juárez, AMAC), in November 2013, Mexico catered for 5,087 manufacturing companies, 326 of which were located in Ciudad Juárez, Chihuahua. Moreover, the region employs about 230,373 industrial workers. These facts were important for conducting a study of BS among middle and senior managers of the manufacturing industry of Ciudad Juárez.

THEORETICAL FRAMEWORK

Occupational Stress

Stress has been defined as a physiological response to specific situations, stimuli, or threats, known as stressors. Melgosa (1999) explains the three stages of stress: alarm, resistance, and exhaustion. The alarm stage is key to recognizing a stressor, whereas the resistance stage occurs when people do not get any relief from the first stage; in other words, it is the response to continuous stress. Finally, the exhaustion stage is when sufferers experience partial or total collapse of the organs. Exhaustion symptoms include tiredness, tension, depression, and stress-related diseases.

Rivera (2013) defines occupational stress as a set of emotional, cognitive, physiological, and behavioral reactions to potentially harmful work-related situations, such as the organization, the content, or

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the environment. Work-related stress is also characterized by high levels of excitement and anxiety as responses to the inability to cope with a given situation. Also, stressed workers are usually not satisfied with their work performance. Finally, as regards its impact on health, work-related stress produces chronic and permanent wear and tear of the biological system, thereby contributing to the incidence of physical, psycho-emotional, and behavior disorders (Calabrese, 2010).

Burnout Syndrome

BS comprises three-dimensional condition characterized by exhaustion, depersonalization, and reduced professional accomplishment among professions directly dealing with clients or patients. From a different perspective, Edelwich and Brodsky (1980) defined Burnout as the gradual loss of idealism, energy, and motivation among helping professions as a result of work-related conditions.

The Body Mass Index (BMI)

Obesity and overweight are two global problems that affect both, developed and developing countries. The World Health Organization (WHO, 2010) considers obesity as an epidemic of a multicausal, chronic, non-communicable disease that starts at an early age. Experts projected in 2015 an amount of 2.3 billion adults with overweight and more than 700 million obese; however, latest data of 2016 have shown that 7 out of 10 adults continue to be overweight with a prevalence of 72.5% percent exceeding experts' projections.

Overweight is an abnormal accumulation of fat, generally from 10% to 20% over an individual's body weight, considering their height. Also, according to the World Health Organization, overweight is a BMI ranging from 25kg/m^2 to 29,9kg/m^2, whereas obesity is a BMI greater than or equal to 30 (Jensen & Ryan, 2013). The leading causes of overweight and obesity are unhealthy eating habits or an imbalance between calories consumed and calories expended. Similarly, the World Health Organization claims that the common health consequences of overweight and obesity include cardiovascular diseases and musculoskeletal disorders; however, there are many ways to prevent and counteract these diseases and disorders. For instance, Klein (2011) proposes to improve the life style by doing exercise and modifying the eating habits.

Dimensions of Burnout Syndrome

According to Maslach (2001), BS is a three-dimensional syndrome characterized by:

- **Emotional Exhaustion:** A state of depletion of energy and resources resulting from working directly with patients and/or customers. It has physical and psychological manifestations and is mainly characterized by fatigue. Emotionally exhausted people feel they have nothing left to give to others.
- **Depersonalization:** The development of a callous attitude, negative feelings, and cynical behavior. It is characterized by increasing irritability, loss of motivation, isolation, and hostile attitudes toward coworkers and customers.
- **Low Professional Efficacy:** Characterized by feelings of inefficacy and incompetence that contribute to a sense of low personal and professional accomplishment. This dimension of BS affects

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the ability to do the job and may deteriorate work relationships. Similarly, there is loss of productivity and low self-esteem, and sufferers are incapable of tolerating occupational pressures. Low professional efficacy is also considered as the inability of a person to properly adapt to their reality (Maslach 2001).

Conceptualization of Overweight and Obesity

Overweight is a main public health concern affecting both developed and developing countries. The World Health Organization considers obesity as an epidemic of a multicausal, chronic, non-communicable disease that starts at an early age. Experts project that by 2015, 2.3 billion adults will be overweight and more than 700 million will be obese. Also, overweight is an abnormal accumulation of fat, generally from 10% to 20% over an individual's body weight, considering their height. According to the World Health Organization, overweight is a BMI ranging from 25kg/m^2 to 29,9kg/m^2 (Jensen & Ryan, 2013).

The leading causes of overweight are wrong eating habits or an imbalance between calories consumed and calories expended. Similarly, the World Health Organization claims that the common health consequences of overweight include cardiovascular diseases and musculoskeletal disorders. However, there are many ways to prevent and counteract these diseases and disorders. Klein (2011), for instance, proposes to improve the life style by doing exercise and modifying the eating habits.

Knowledge Management in Healthcare

The definition of knowledge management is that knowledge must involve an agent, who uses knowledge to perform the actions necessary to reach a goal. Knowledge management is an emerging field that has commanded attention and support from the industrial community. Many organizations currently engage in knowledge management in order to leverage knowledge both within their organization and externally to their shareholders and customers. Knowledge management involves the creation of value from organizations intangible assets (Arroyo & Castillo, 2017; Mazita, Amlus, Kamsidi, & Zaniel, 2016). In this manner, knowledge management about the effects of BS on BMI that could impact overweight and obesity of employees may be an area for growing opportunities for both, the company as well as personnel.

Another potential area, could be found in the development of decision support systems and knowledge management systems regarding psychosocial risks at work and healthcare. Healthcare is a knowledge intensive industry, the importance of medical knowledge has been highlighted in the ongoing initiatives to promote evidence-based medicine and clinical quality. The Agency for Healthcare Research and Quality 2012 cited strong evidence that clinical decision support systems and knowledge management systems can be effective in improving health care process measures across diverse settings using both commercially and locally developed systems. It is likely that these systems will become a key part of the infrastructure of all healthcare organizations over the next few years (Lobach D, Sanders GD, Bright TJ, 2012).

The Manufacturing Industry of Ciudad Juárez

Ciudad Juárez is one of the Mexican major manufacturing regions. Worldwide, it is recognized as a key industrial center thanks to its status as border city. According to the Association of Manufacturers (AMAC, 2013), Ciudad Juárez caters for 329 of the 5,111 manufacturing companies located in Mexico,

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29% of these industries are automotive manufacturers, 7% are electrical manufacturers, 18 are electronics manufacturers, 9% produce plastic or metal goods, 9% are packaging manufacturing companies, and 3% provide customer services.

MATERIALS

This section describes and explains the materials employed to conduct the study.

The Survey

The Maslach Burnout Inventory–General Survey (Moreno, B., Rodríguez, R., & Escobar, E., 2001) was administrated as an instrument for data acquisition; further analyses were made using these data to determine the relationships among work content variables and BS using structural modelling. In addition, a sociodemographic questionnaire was designed to gather information such as age, gender, number of children, marital status, and academic background.

The Maslach Burnout Inventory-General Survey (MBI-GS)

The Maslach Burnout Inventory–General Survey (Schaufeli, W.B., Leiter, M.P., Maslach, C., & Jackson, S.E., 1996) was administered to measure BS dimensions. Unlike the Maslach Burnout Inventory Survey (MBI), the MBI-GS is not exclusive to human service professions. The Spanish version of the MBI-GS by Moreno et al. (2001) was used, which includes 16 items to analyze the three BS dimensions: emotional exhaustion (5 items), cynicism (5 items), and professional efficacy (6 items). The survey had to be answered using a seven-point Likert scale (never, rarely in a year, sometimes in a year, on many occasions in a year, frequently in a year, almost every day, always). In this sense, low scores in *professional efficacy* and high scores in *emotional exhaustion* and *cynicism* indicated existence of *BS*. Two examples of items found in the MBI-GS are the following: *I am able to effectively solve problems at work* (item 5) and *I feel fulfilled when I do something good at work* (item 11). Previous studies confirm the structure of the three factors (Gil-Monte, 2002). Internal consistency indices of the MBI-GS, obtained through the Cronbach alpha, are 0.89 for Emotional Exhaustion, 0.84 for Cynicism, and 0.85 for Professional Efficacy.

To determine BS levels, the methodology proposed by Guerrero and Vicente (2001), previously adopted by Maldonado, et al. (2015).

Software WarpPLS

This software uses Partial Least Squares algorithms (PLS) for structural equations modeling (SEM). It provides users with a broad range of features, several of which are not available in other SEM software (Kock, 2013). Moreover, WarpPLS is the first and only to offer classic PLS algorithms together with factor-based PLS algorithms (Kock, 2014).

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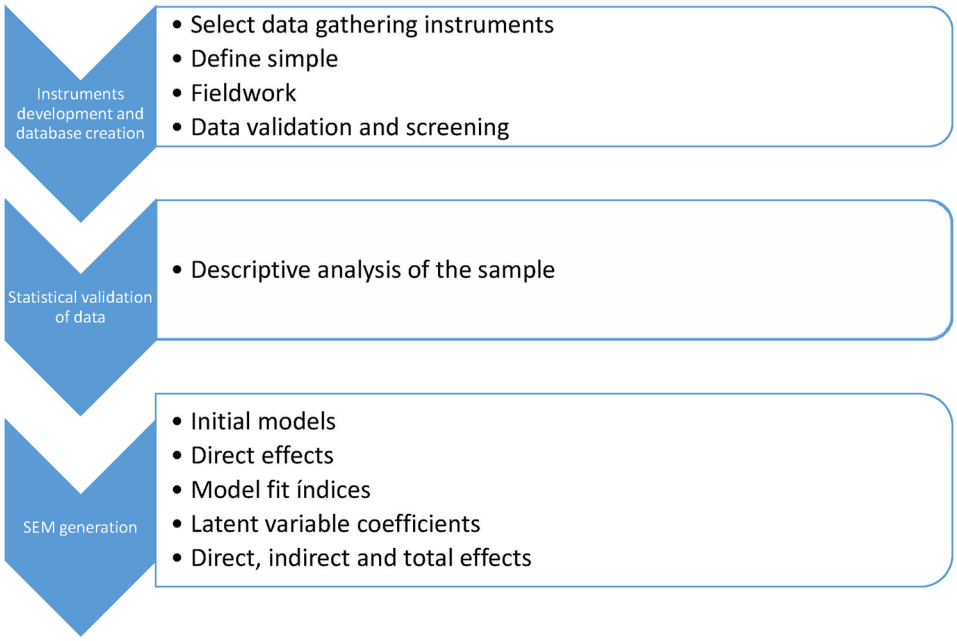
METHODOLOGY

This section thoroughly describes each step followed to meet the research goal.

Figure 1. Methodology



Survey Administration

To measure BS, it was used the Spanish version of the Maslach Burnout Inventory General Survey (MBI-GS), validated by Moreno et al. (2001). Some of the advantages of using this questionnaire are that the MBI-GS is not exclusive to human service professions; moreover, previous studies have demonstrated its reliability in the three dimensions (Gil-Monte, 2002) using the Cronbach's alpha index, which showed values higher than 0.7 in all dimensions. According to (George & Mallery, 2003), values above 0.7 are acceptable indicators of reliability. Written consent from participants was collected individually using a proper format and according to the University requirements.

Sample Definition

The sample was non-probabilistic, it was obtained using the snowball sampling technique to select individuals with the desired characteristics. Meetings were scheduled with six manufacturing companies in Ciudad Juárez to present the research among company's doctors and managers.

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Fieldwork and Survey Administration

Surveys were administered to manufacturing companies during sessions previously scheduled by their Human Resources departments. As previously mentioned, the sample comprised middle and senior managers.

Database Creation and Screening

An electronic database was created with data collected using SPSS software. The database included information from 361 participants. This sample finally it was classified according to each participant's BMI. For the visualization of data, a descriptive analysis of the sample it was performed to detect missing values and atypical values. In the MBI-GS, missing values and atypical values were replaced by the median value of the items, since the questionnaire collected ordinal data. On the other hand, since the IMC values were ordinal data, missing values and atypical values were replaced by the mean.

Statistical Validation of Data

The descriptive analysis of the sample was performed using SPSS® v.20 software. At this stage, sociodemographic information was analyzed and frequency percentages were provided for the characteristics studied (gender, academic background, marital status, type of employment contract, seniority, work schedule, job position, etc.). Similarly, the analysis provided quartile values for each characteristic and frequency percentages for BS levels: none, low, medium, high and extreme.

Latent Variables Validation

The Cronbach alpha index was calculated to validate the data collected. Cronbach's alpha measures the reliability of the data on a scale. The denomination "alpha" was proposed by Cronbach (1951) and the index represents the average covariance between pairs of articles. It can be calculated using the variations or the correlation between the items. In this investigation, the Cronbach's alpha was calculated taking into account the correlation of the items and using the formula presented below:

$$1.\ \alpha est = \frac{kp}{1 + p\left(k - 1\right)}$$

k= number of itemsp=average of correlation of items

In this formula, the validation ranges from 0 to 1 on a scale that considers 0.7 as an acceptable value, although values greater than 0.90 are more satisfying.

After the data capture process, data were detected by means of the substitution of median and atypical values for the median and mean values (García, 2014). Median ordinal data and mean continuous data.

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Occurrence of Burnout Syndrome in Average Scores

Following the suggestions of Vicente (2001), SPSS software was used to calculate the occurrence of BS in average scores. First, each observed variable was analyzed; then, each dimension is examined to obtain the median, as well as the maximum and minimum score of each dimension. Finally, these scores are compared with findings reported in previous studies, such as that of Guerrero, Vicente (2001).

Occurrence of Burnout Syndrome in Degrees

BS levels were defined (high, medium and low) by analyzing whether the mean scores fit the first, second or third tertile. For this, BS was divided into its three grades: low, medium and high with cut points in the 33rd and 66th percentiles (Vicente, 2001).

Occurrence of Burnout Syndrome in Levels

In this part, the level of BS suffered in five categories is presented. To obtain the occurrence of BS in the levels, the data on the occurrence BS in grades were used and the 27 combinations were made to obtain the categories. Readers can consult the section of the appendix to consult the table of combinations.

Structural Equation Models

At this stage, the two models of structural equations were created and validated. These models include the latent variables under study. The first model seeks to study the relationships between BS and normal weight, while the second model analyzes the relationships between BS and overweight. The relationships between latent variables refer to the research hypotheses. These hypotheses were analyzed using WarpPLS 4.0 software, using the P-value as inclusion criterion.

Hypothetical Models

The research hypotheses were proposed by considering findings of previous studies. Such studies have demonstrated significant relationships between the BS dimensions and the BMI. For instance, (Dallman, 2010) found a rapport between emotional exhaustion and anxiety, eating disorders, and emotional dissatisfaction. Likewise, Ahola (2012) found no relationship between cynicism and the BMI, although professional efficacy did seem to be related to the BMI. In other words, the author found that professional efficacy grows as workers increase their physical activity. Figure 2 and Figure 3 depict the two models to be analyzed.

Direct Effects

In SEM, direct effects are represented as arrows directly connecting two latent variables. Direct effects help validate research hypotheses.

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Figure 2. Proposed Model: Burnout Syndrome - Normal Weight Relationship

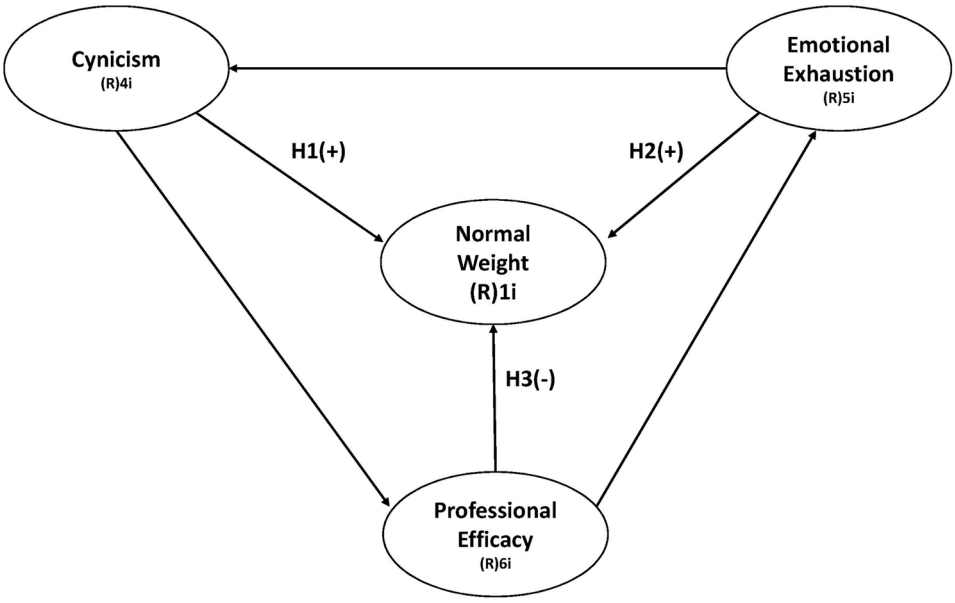
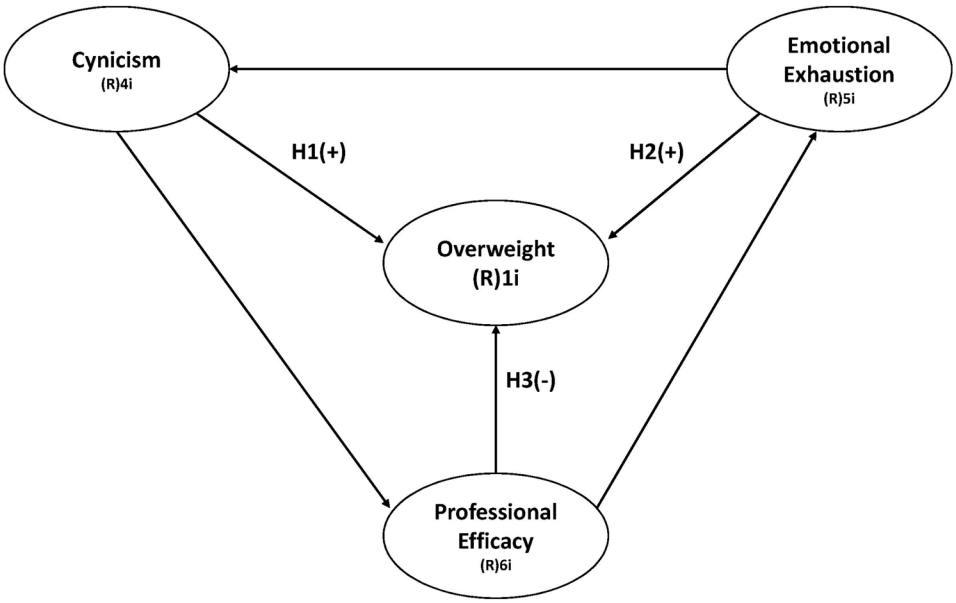


Figure 3. Proposed Model: Burnout Syndrome - Overweight Relationship



Model Fit Indices

To validate the models, nine indexes proposed by Knock (2013) were calculated: Average path coefficient (APC), average R-square (ARS), average adjusted R-square (AARS), average block variation Inflation factor AVIF) Full Collinearity VIF (AFVIF), Tenenhaus Adjustment Quality (GoF), Simpson

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Paradox Relationship (SPR), R-Square Contribution Coefficient (RSCR) and Statistical Suppression Coefficient (SSR).

Coefficient of Latent Variables

Seven indexes were used to validate the surveys: R-square (R2), adjusted R-squared, Q-square (Q2), composite reliability index, Cronbach's alpha, variance inflation factors (VIF), and average full collinearity FIV (AFVIF)

Sum of Effects

To estimate direct, indirect and total effects we rely on WarpPLS 5.0 software. For the direct effects, the R2 value of each dependent latent variable was analyzed to determine the percentage of the explained variance. As for the indirect effects, they were produced through the mediation of the variables using two or more model paths. The total effects of each relationship were obtained by adding direct and indirect effects.

RESULTS

Survey Administration and Validation

This section discusses how the survey was administered and validated. The study was conducted in manufacturing companies located in Ciudad Juarez, Chihuahua, Mexico. A non-probabilistic sample was selected and the questionnaires were administered during the sessions previously scheduled by the human resources department of each company. Three of the companies studied manufacture automotive parts, two manufacture electric products and produce various products.

Table 1. Surveyed Companies

Company	Frequency	Percentage
Company 1	41	11.4
Company 2	42	11.6
Company 3	53	14.7
Company 4	100	27.7
Company 5	103	28.5
Company 6	22	6.1
Total	361	100.0

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Descriptive Analysis of the Sample

The descriptive analysis of the overweight sample revealed that men suffer more from obesity than women (72.94% versus 27.06%, respectively). As regards age, it seems that 31-40-year old employees are more prone to overweight (38.24%), followed by 41-50 year-old (27.65%), whereas employees under 30 (22.94%) or those older than 50 (11.18%) are less commonly affected. Also, the minimum age reported was 18, whereas 60 years old was the maximum age, 37.65 the mean, and 9.24 the standard deviation. Such results indicate that overweight is more prevalent among young working adults.

As regards the relationship between academic background and overweight, it was found that 66.67% of employees holding a bachelor degree were obese, but only 9.52% of workers with a master's degree suffer from this condition. These results may suggest that employees academically more educated have more tools to cope with stress and reduce the presence of obesity. Likewise, the descriptive analysis demonstrated that 87.5% of the sample holds a contract of indefinite duration, while 9.52% of the surveyed employees works under a temporary contract.

As far as seniority is concerned, the minimum length reported was 1 month, 360 months was the maximum, 102.41 months was the mean, and 83.58 months was the standard deviation. Similarly, it was found that overweight is more prevalent among employees with longer seniority, namely with over 73 months (52.69%). Such results may suggest that for senior workers the fear of job loss makes them more susceptible to the effects of stress and overweight.

Results also indicate that married employees (38.08%) are more vulnerable to obesity than unmarried workers (28.24%) or those living in free union (11.38%). Similarly, it was found that only 1.8% of employees have lost a spouse. As for working hours, it seems that overweight affects more employees with long working hours. In this case, 30.3% of the sample works 48 hours per week, 29.76% work more than 56 hours, 25.45% work 45 hours and only 14.55% of the sample works 42 hours weekly.

Regarding the anthropometric information, it was found a 1.49 meters (m) as minimum height, 1.90 m as maximum, 1.71m as average height and 0.085m as standard deviation. Regarding the variable of weight, the descriptive analysis reported 49 kilograms (kgs) as minimum weight, 100 kgs maximum, an average weight of 80.54 kgs and 8.69 kgs as standard deviation. Finally, when analyzing the departments of the company, overweight is more frequent in the engineering department (34.71%), followed by the production and maintenance department (31.76%), administrative offices (17.06%), and finally the Department of Environment and Security (5.29%).

Results by Average Scores

Table 2 shows the average scores of the three dimensions of BS. Note that emotional exhaustion shows an average value of 10.29, while cynicism or depersonalization shows an average value of 6.0970, and 28.5540 was the average value for professional effectiveness

Results by Degrees

Table 3 shows the degrees of BS obtained from the sample. The mean scores, more specifically the mean values that were used from the above table to categorize the BS grade for each dimension. According to mean scores, the sample provided a Medium degree of BS in all three dimensions.

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Table 2. Occurrence of Burnout Syndrome: Average Score

Average Scores					
Dimension	**N**	**Minimum**	**Maximum**	**Mean**	**Standard Deviation**
Emotional Exhaustion	361	.00	30.00	10.2909	6.31719
Cynicism/ Depersonalization	361	.00	30.00	6.0970	5.51604
Professional Efficacy	361	11.00	36.00	28.5540	5.85121

Table 3. Degrees of Burnout

Degrees of Burnout	Emotional Exhaustion	Cynicism/ Depersonalization	Professional Efficacy
LOW	< 7	< 3	> 33
MEDIUM	8 – 12 (10.29)	4 – 7 (6.09)	28 – 32 (28.55)
HIGH	> 13	> 8	< 27

Results by Levels of Burnout

Table 4 presents the obtained results for the five levels of BS. According to these results, 93 participants do not suffer from any level of BS, whereas the remaining 268 suffer from this condition in any of the four remaining levels: low, medium, high, and extreme.

Table 4. Levels of Burnout

	Frequency	Percentage	Valid Percentage	Cumulative Percentage
None	93	25.8	25.8	25.8
Low	45	12.5	12.5	38.2
Medium	56	15.5	15.5	53.7
High	84	23.3	23.3	77.0
Extreme	83	23.0	23.0	100.0
Total	361	100.0	100.0	

Figure 4 introduces the prevalence of BS expressed in percentages. More specifically, the graph presents the percentage of participants that suffer from BS in any of its five levels.

As can be observed, 98 participants do not suffer from BS representing 25.76% of the sample, whereas 45 participants, or 12.47% of the sample, suffer from a low level of BS. Similarly, 15.51% or 56 participants present a medium level of BS. On the other hand, 23.27% of the sample (84 participants) presents high levels of BS, whereas the remaining 22.99% (83 participants) suffers from extreme levels.

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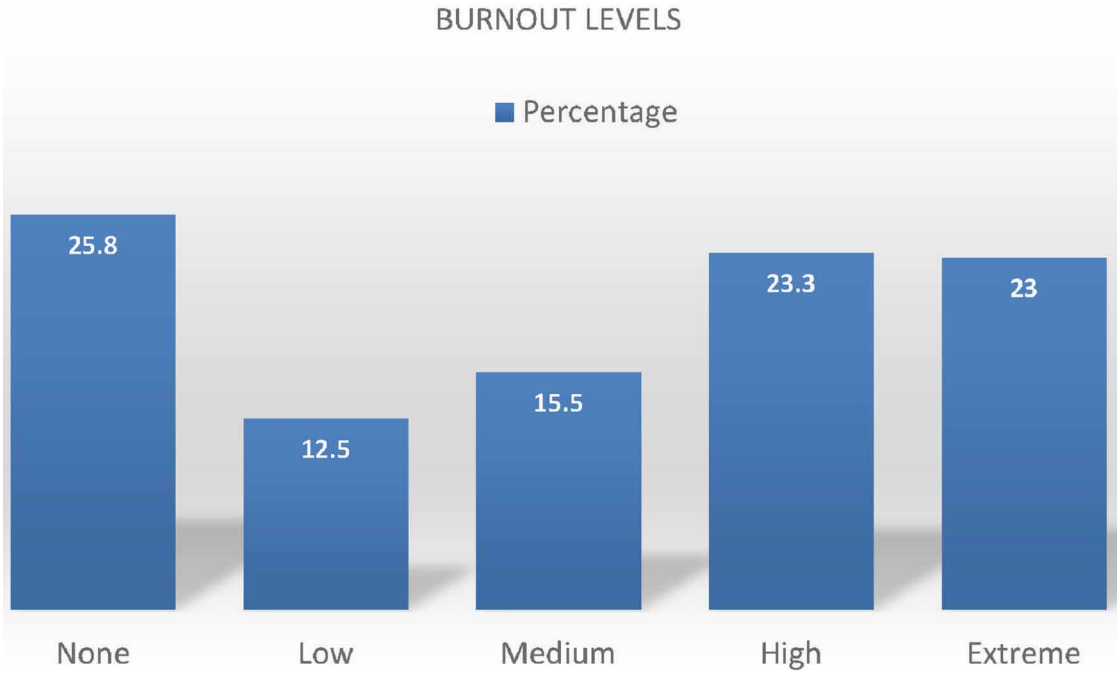
Figure 4. Graph of Levels of Burnout in Percentages



Two Structural Equation Models

The models presented in the following sections take as basis the results discussed above to find any possible relationships among the three BS dimensions and the BMI, namely normal weight and overweight. Such relationships can explain better what causes BS, overweight, and obesity. The models interpret the rapports between BS and normal weight and between BS and overweight as direct/indirect or positive/negative relationships.

Model of the Relationships Between BS Dimensions and Normal Weight

In this model, the three BS dimensions was associate with the BMI of participants with normal weight.

Every path in the model is associated with a β value and a P value; the former represents a measure of dependency between the involved variables, while the latter indicates whether a relationship is statistically significant at a 95% confidence level.

Validation of Latent Variables and Model Efficiency Indices

Table 5 presents the quality indices of every variable forming the latent variables. Note that the Cronbach's alpha and composite reliability values were above 0.7. Only variables with a good reliability index were maintained.

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Figure 5. Model of the relationships between BS dimensions and normal weight

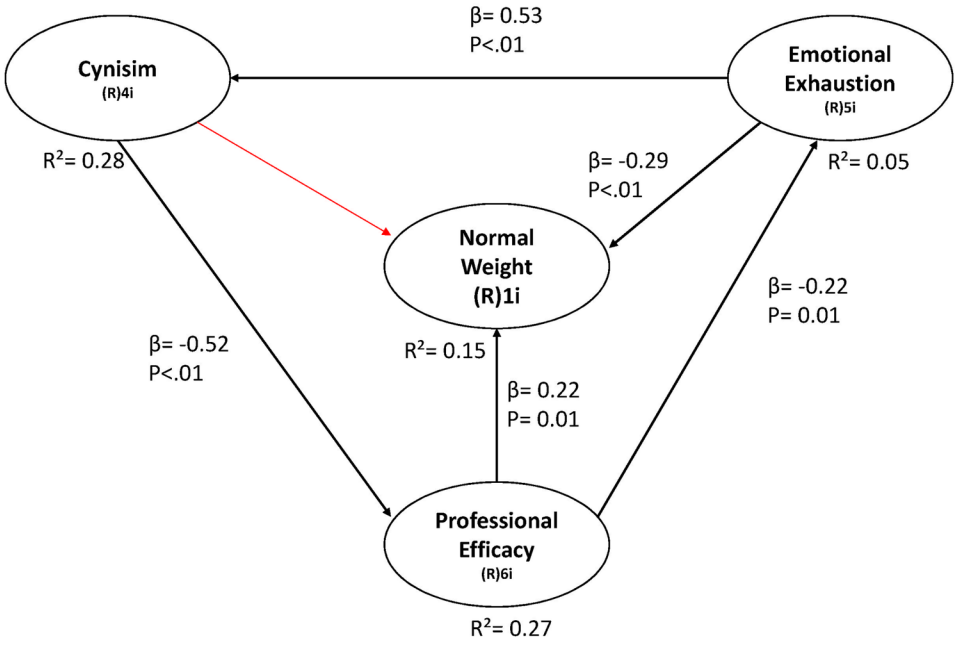

Figure 6. Model of BS dimensions and Normal Weight

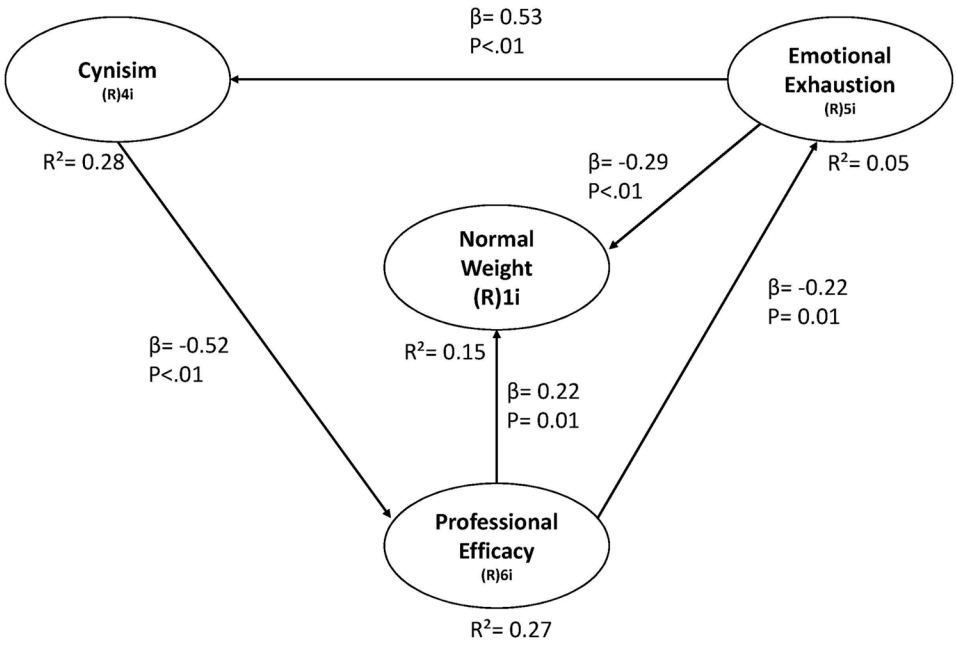

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Table 5. Validation of Latent Variables

	Cynicism	Emotional Exhaustion	Professional Efficacy	NORMAL
R-Squared	0.284	0.05	0.27	0.146
Adjusted R-Squared	0.276	0.04	0.262	0.127
Composite Reliability	0.939	0.941	0.919	1
Cronbach's Alpha	0.913	0.922	0.893	1
Average Variance Extracted	0.794	0.762	0.654	1
Full collinearity VIFs	1.657	1.342	1.344	1.09
Q-Squared	0.288	0.056	0.27	0.153

As for latent variables, AVE confirmed the survey's discriminant validity, since all its values were higher than 0.5. Similarly, because VIFs values were lower than 3.3, the existence of no multicollinearity was confirmed (Kock, 2013). Finally, all the values of the Q-Squared were higher than 0 and very similar to their corresponding R-Squared values. Such results demonstrated that all latent variables had enough validity from a parametric perspective. Table 6 introduces the loadings and cross-loadings of the latent variables. Such results proved that the P value of every element was statistically significant at a 95% confidence level.

Model Fit Indices

Table 7 presents the model fit indices obtained for this model. Considering the P values of APC, ARS, and AARS, it was concluded that the model was efficient and all the parameters had medium explanatory capacity. Similarly, the Tenenhaus GoF demonstrated that the model had medium explanatory capacity. In conclusion, the model proposed in this section to explain the relationship between BS dimensions and normal weight is efficient.

Direct Effects

Figure 7 presents the effects between latent variables. The ß and P values helped us interpret and explain these direct effects. As previously mentioned, ß values represent the dependency measure between two latent variables, while P values define whether a relationship is statistically significant at a 95% confidence level. For a relationship to be statistically significant, its P value had to be lower than 0.5. As can be observed, latent variables Emotional Exhaustion and Professional Efficacy are directly significant, whereas Cynicism is rather indirectly significant.

Figure 8 shows the effects between latent variables for the final model. In this figure, the relationships that were statistically not significant were eliminated.

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Table 6. Validity of Cross-Loadings

	Cynicism	Emotional Exhaustion	Professional Efficacy	Normal	P Value
Cynicism	-0.885	0.047	0.067	-0.02	<0.001
Cynicism	-0.921	0.115	-0.073	-0.07	<0.001
Cynicism	-0.852	-0.103	-0.051	0.03	<0.001
Cynicism	-0.904	-0.065	0.057	0.062	<0.001
Emotional Exhaustion	0.105	-0.896	0.011	0.069	<0.001
Emotional Exhaustion	-0.139	-0.885	-0.039	-0.036	<0.001
Emotional Exhaustion	0.064	-0.849	0.023	-0.071	<0.001
Emotional Exhaustion	-0.057	-0.855	-0.003	-0.03	<0.001
Emotional Exhaustion	0.027	-0.878	0.008	0.065	<0.001
Professional Efficacy	0.296	-0.019	-0.733	-0.067	<0.001
Professional Efficacy	-0.211	-0.012	-0.772	-0.132	<0.001
Professional Efficacy	0.223	0.147	-0.822	0.129	<0.001
Professional Efficacy	-0.1	0.015	-0.866	0.066	<0.001
Professional Efficacy	-0.167	-0.047	-0.867	0.08	<0.001
Professional Efficacy	-0.008	-0.09	-0.783	-0.104	<0.001
BMI	0	0	0	-1	<0.001

Table 7. Model fit indices

	Value	Decision Criteria
Average Path Coefficient (APC)	0.358	P<0.001
Average R-Squared (ARS)	0.188	P=0.014
Average Adjusted R-Squared (AARS)	0.176	P=0.019
Average block Variance Inflation Factor (AVIF)	1.009	acceptable <= 5, ideally <= 3.3
Average Full collinearity VIF (AFVIF)	1.358	acceptable <= 5, ideally <= 3.3
Tenenhaus GoF (GoF)	0.388	small >= 0.1, medium >= 0.25, large >= 0.36
Simpson's Paradox Ratio (SPR)	1.00	acceptable if >= 0.7, ideally= 1
R-Squared Contribution Ratio (RSCR)	1.00	acceptable >= 0.9, ideally <= 1.00
Statistical Suppression Ratio (SSR)	1.00	acceptable >= 0.7

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Figure 7. Direct Effects of the Initial Model

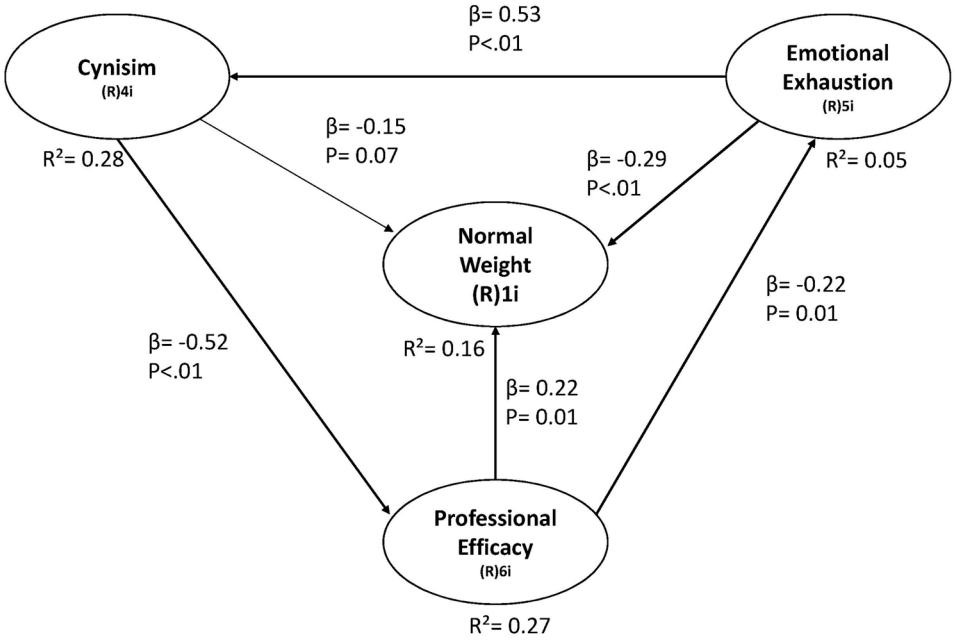

Figure 8. Direct Effects for the Final Model

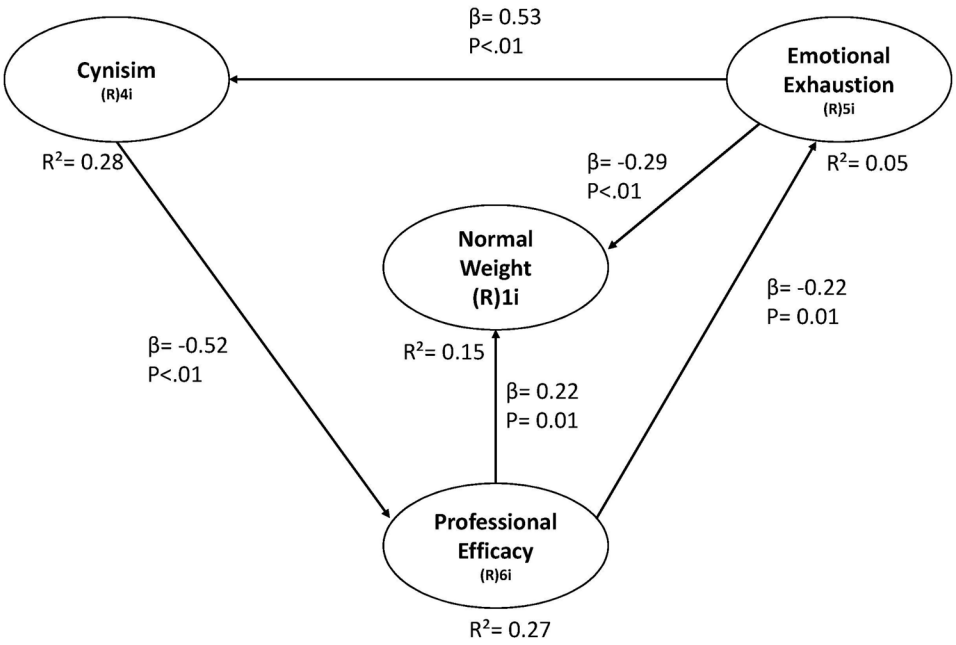

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Table 8 presents the conclusions regarding the R^2 values. The table indicates that latent variable Emotional Exhaustion is 5% explained by latent variable Professional Efficacy. As for Cynicism, it is 26% explained by Emotional Exhaustion, whereas Professional Efficacy depends on Cynicism in 27%. Also, the model shows that latent variable Normal Weight can be 15% explained by both Emotional Exhaustion and Professional Efficacy. In conclusion, Professional Efficacy can significantly reduce both Emotional Exhaustion and Cynicism. If a company does not pay attention to the Professional Efficacy of its employees, this may have a negative impact on its productivity.

Table 8. Effect Sizes

	Cynicism	Emotional Exhaustion	Professional Efficacy
Cynicism		0.258	
Emotional Exhaustion			0.05
Professional Efficacy	0.27		
Normal Weight		0.093	0.053

Sum of Indirect Effects

In structural equation models, relationships are not always direct. Table 9 presents the sum of indirect effects for every relationship in the final model. P values higher than 0.5 refer to indirect relationships that are statistically not significant.

Three indirect relationships are worth being highlighted. First, it was found that when Normal Weight increased by one standard deviation, Cynicism decreased by 0.147 units and had a variability of 7%. As for the relationship between Professional Efficacy and Emotional Exhaustion, it was found that when the former increased by one standard deviation, the latter decreased by 0.277 units and had a variability of 5%. Finally, with respect to Cynicism and Professional Efficacy, the results revealed that when Cynicism increased by one standard deviation, Professional Efficacy decreased by 0.119 units and had a variability of 7%. All the remaining relationships can be similarly interpreted.

Table 9. Sum of Indirect Effects

	Cynicism	Emotional Exhaustion	Professional Efficacy
Cynicism	β.062 p=.145 ES=.062		β=-.119 p=.046 ES=.07
Emotional Exhaustion	β=.116 p=.05 ES=.070	β=.062 p=.145 ES=.058	
Professional Efficacy		β=-.277 p<.001 ES=.067	β=.062 p=.145 ES=.058
Normal Weight	β=-.147 p=.019 ES=.07	β=-.06 p=.153 ES=.058	β=.066 p=.178 ES=.071

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Total Effects

Table 10 presents the total effects for every relationship of the model. Total effects are the sum of direct and indirect effects. As in the previous section, P values higher than 0.5 belong to relationships that are statistically not significant at a 95% confidence level.

The two largest total effects involve latent variables Emotional Exhaustion, Professional Efficacy and Normal Weight. In the relationship between Emotional Exhaustion and Professional Efficacy, when Emotional Exhaustion increased by one standard deviation, Professional Efficacy decreased by 0.224 units with 9.6% of variability. As for the relationship between Normal Weight and Professional Efficacy, it was found that when Normal Weight increased by one standard deviation, Professional Efficacy increased by 0.283 units. The remaining relationships can be similarly interpreted.

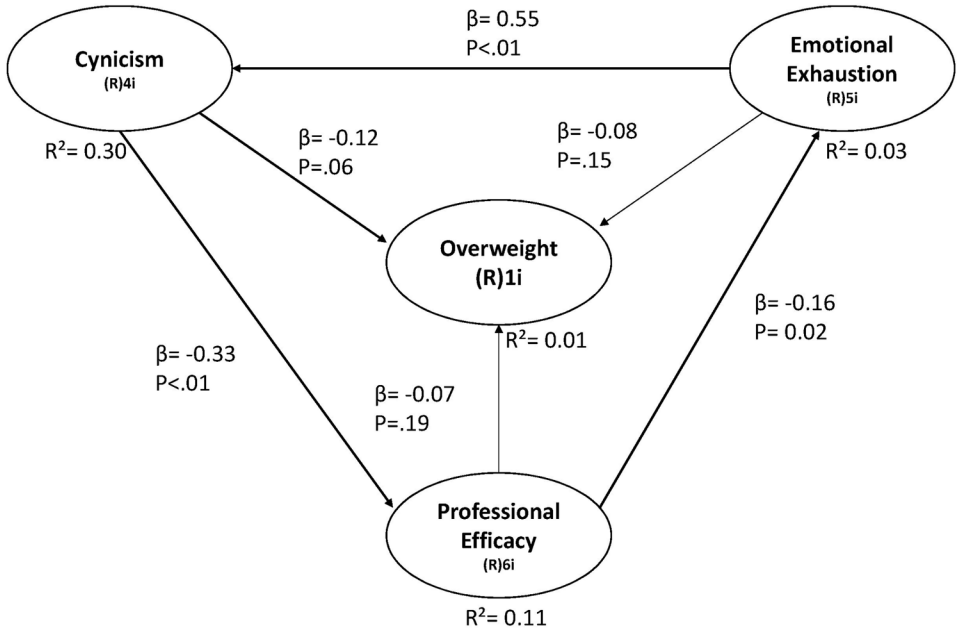
Table 10. Total Effects

	Cynicism	Emotional Exhaustion	Professional Efficacy
Cynicism	β=.62 p=.145 ES=.058	β=.533 p<.001 ES=.088	β=-.119 p=.046 ES=.07
Emotional Exhaustion	β=.116 p=.05 ES=.070	β=.062 p=.145 ES=.058	β=-.224 p=.011 ES=.096
Professional Efficacy	β=-.519 p<.001 ES=.089	β=-.277 p<.001 ES=.067	β=.062 p=.145 ES=.058
Normal Weight	β=-.147 p=.019 ES=.07	β=-.355 p<.001 ES=.093	β=.283 p=.002 ES=.095

Model of the Relationships Between BS Dimensions and Overweight

In this second model, the three BS dimensions are associated with overweight (Figure 9).

Figure 9. Relationships between BS dimensions and Overweight: Initial Model



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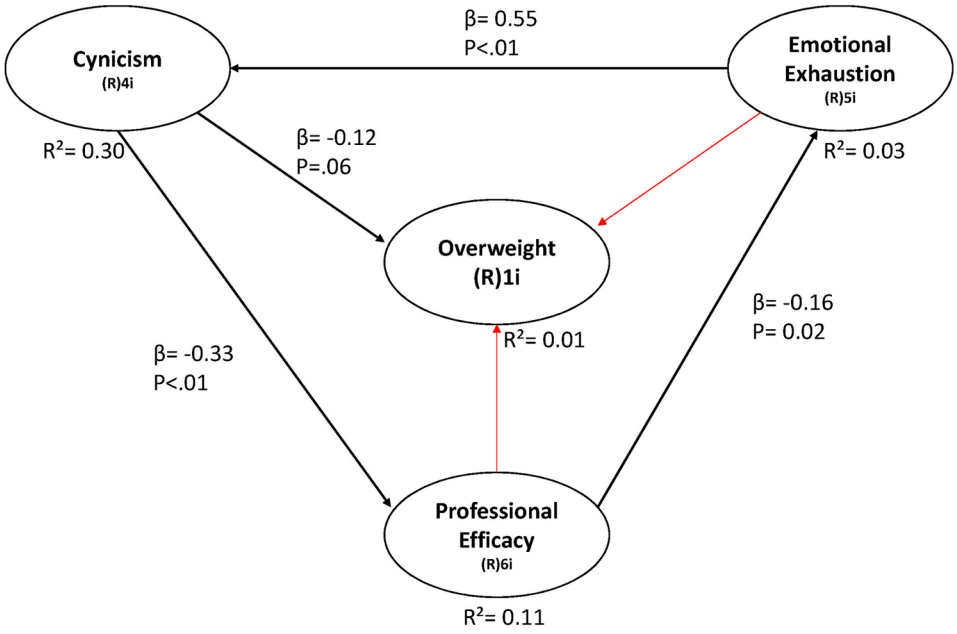
Results and Model Efficiency

Table 10 presents the quality indicators of the observed variables contained in the four latent variables. As can be observed, values of the Cronbach's alpha and the composite reliability index are higher than 0.7, the threshold. Only variables that showed acceptable reliability were maintained.

As for the latent variables, it was proved that all of them had enough convergent validity, since all AVE values were higher than 0.5. Likewise, VIFs values, which were lower than 3.3 in all cases, confirmed the existence of no collinearity (Kock, 2013). Finally, since Q-Squared values were obtained above 0 and similar to their corresponding R-Squared values, it was concluded that the four latent variables had enough parametric validity.

Estimates presented in the table demonstrated the model's efficiency, since all P values were lower than 0.5. Likewise, the values of these indices confirmed medium explanatory capacity of all the model's parameters, whereas the Tenenhaus GoF confirmed the model's medium explanatory capacity. In summary, the model that it was propose to explain the relationships between the three BS dimensions and overweight is efficient.

Figure 10. Relationships between Burnout dimensions and Overweight: Final Model



Validation of Latent Variables and Model Efficiency

Table 11 presents the quality indicators of variables contained in the four latent variables. As can be observed, values of the Cronbach's alpha and the composite reliability index are higher than 0.7, the threshold. Only variables that showed acceptable reliability were maintained.

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Table 11. Validation of Latent Variables

	Cynicism	Emotional Exhaustion	Professional Efficacy	Normal Weight
R-Squared	0.284	0.05	0.27	0.146
Adjusted R-Squared	0.276	0.04	0.262	0.127
Composite Reliability Index	0.939	0.941	0.919	1
Cronbach's Alpha	0.913	0.922	0.893	1
Average Variance Extracted	0.794	0.762	0.654	1
Full collinearity VIFs	1.657	1.342	1.344	1.09
Q-Squared	0.288	0.056	0.27	0.153

As for latent variables, it was proved that all of them had enough convergent validity, since all AVE values were higher than 0.5. Likewise, VIFs values, which were lower than 3.3 in all cases, confirmed the existence of no collinearity (Kock, 2013) among latent variables. In addition, since Q-square values above 0 and similar to their corresponding R-squares were obtained, it was concluded that the four latent variables had enough parametric validity. Finally, Table 12 introduces the loadings and cross-loadings of latent variables. As observed, all P values are lower than 0.05, which implies that both loadings and cross-loadings are statistically significant.

Because the P values of APC, ARS, and AARS were lower than 0.5, it was concluded that the model was efficient and all the model parameters had medium explanatory capacity. Similarly, the Tenenhaus GoF demonstrated that this model had medium explanatory capacity. In conclusion, the model that it was propose in this section is efficient.

Direct Effects

Figure 11 illustrates the effects between latent variables. Every effect was associated with a ß value and a P value. The former represents a dependency measure between two latent variables, and the latter indicates whether a relationship is statistically significant at a 95% confidence level. For a relationship to be statistically significant, its corresponding P value had to be lower than 0.5. As can be observed, Cynicism is the only BS dimension that is directly significant, whereas Emotional Exhaustion is indirectly significant.

Conclusions regarding R^2 values are presented in Table 14. In this analysis, it was found that latent variable Emotional Exhaustion was 2.6% explained by latent variable Professional Efficacy. As for Cynicism, it seemed to be 29.8% explained by Emotional Exhaustion, whereas Professional Efficacy was 11.1% explained by Cynicism. Finally, Normal Weight is 1.4% explained by Cynicism. Such results demonstrated that Professional Efficacy can significantly reduce Emotional Exhaustion and Cynicism. Therefore, companies are advised to provide employees with suitable opportunities to maintain or increase their efficiency at work, otherwise it may affect the overall organization's productivity.

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Table 12. Loadings and Cross-Loadings

	Cynicism	Emotional Exhaustion	Professional Efficacy	Overweight	P Value
Cynicism	0.846	-0.098	0.009	-0.034	<0.001
Cynicism	0.832	0.031	-0.001	-0.022	<0.001
Cynicism	0.861	0.052	-0.043	-0.011	<0.001
Cynicism	0.923	0.014	0.033	0.062	<0.001
Emotional Exhaustion	-0.038	0.876	-0.022	-0.043	<0.001
Emotional Exhaustion	-0.056	0.902	0.073	-0.058	<0.001
Emotional Exhaustion	0.104	0.877	-0.006	0.034	<0.001
Emotional Exhaustion	0.013	0.828	-0.092	0.079	<0.001
Emotional Exhaustion	-0.021	0.853	0.04	-0.007	<0.001
Professional Efficacy	-0.11	0.064	0.687	0.012	<0.001
Professional Efficacy	-0.126	0.018	0.792	0.023	<0.001
Professional Efficacy	0.128	0.028	0.806	-0.066	<0.001
Professional Efficacy	-0.039	0.038	0.839	0.026	<0.001
Professional Efficacy	-0.046	0.114	0.864	0.02	<0.001
Professional Efficacy	0.2	-0.29	0.731	-0.018	<0.001
BMI	0	0	0	1	<0.001

Table 13. General Results of the Burnout - Overweight Model

	Value	Decision Criteria
Average Path Coefficient (APC)	0.29	P<0.001
Average R-Squared (ARS)	0.112	P=0.034
Average Adjusted R-Squared (AARS)	0.107	P=0.039
Average block VIF (AVIF)	1.214	acceptable <= 5, ideal <= 3.3
Average Full collinearity VIF (AFVIF)	1.232	acceptable <= 5, ideal <= 3.3
Tenenhaus GoF (GoF)	0.296	small >= 0.1, medium>= 0.25, large >= 0.36
Simpson's Paradox Ratio (SPR)	1.00	acceptable >= 0.7, ideally: 1
R-Squared Contribution Ratio (RSCR)	1	acceptable >= 0.9, ideally: 1
Statistical Suppression Ratio	1	acceptable >= 0.7

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Figure 11. Relationships Burnout - Overweight: Final Model

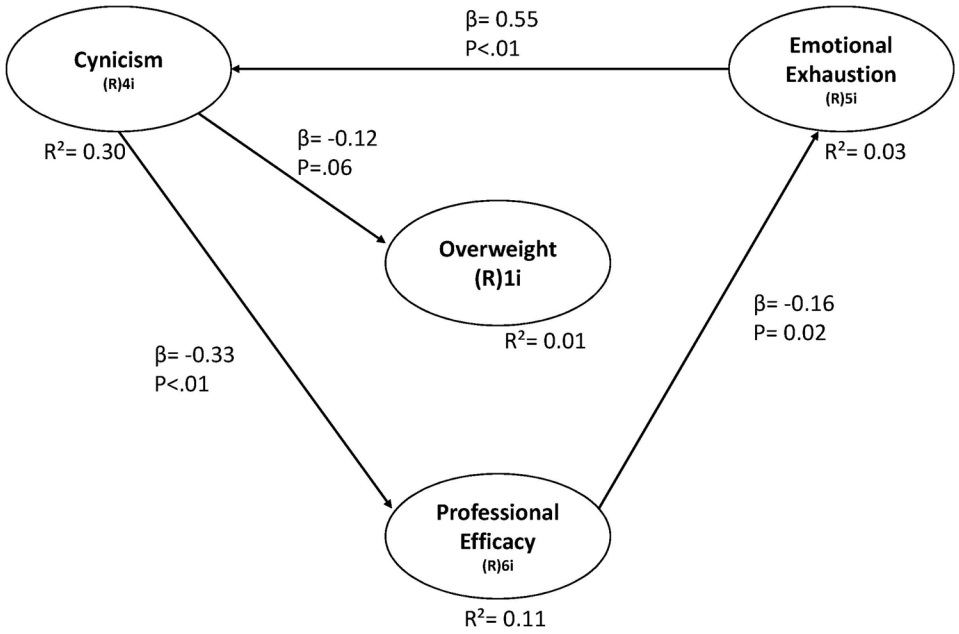

Table 14. Effect Sizes

	Cynicism	Emotional Exhaustion	Professional Efficacy	Normal Weight
Cynicism		0.298		
Emotional Exhaustion			0.026	
Professional Efficacy	0.111			
Normal Weight	0.014			

Sum of Indirect Effects

In structural equation models, relationships are not always direct. Table 15 presents the sum of indirect effects for every relationship in the final model. P values higher than 0.5 indicate that such relationships are not statistically significant. In this table, the relationship between Overweight and Cynicism is worth being emphasized, since the results demonstrated that when Overweight increased by one standard deviation, Cynicism decreased 0.147 units with 7% of variability.

Total Effects

Table 16 presents the total effects for every relationship in the final model. Some relationships are statistically not significant since their corresponding P-values were higher than 0.05. On the other hand, the relationship between Cynicism and Emotional Exhaustion showed the largest total effects. In fact, results revealed that when Cynicism increased by one standard deviation, Emotional Exhaustion increased by

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0.546 units, with 29.8% of variability. In addition, it was found that when Professional Efficacy increased by one standard deviation, Cynicism decreased by 0.333 units, with 11.1% of variability.

Table 15. Sum of indirect effects

	Cynicism	Emotional Exhaustion	Professional Efficacy
Cynicism	β.029 p=.253 ES=.029	β=-.088 p=.05 ES=.017	
Emotional Exhaustion	β=.054 p=.158 ES=.029	β=.029 p=.253 ES=.029	
Professional Efficacy	β=-.182 p=<.001 ES=.023	β=.029 p=.253 ES=.029	
Overweight	β=-.065 p=.114 ES=.007	β=.010 p=.406 ES=.000	

Table 16. Total effects

	Cynicism	Emotional Exhaustion	Professional Efficacy
Cynicism	β=.029 p=.253 ES=.029	β=.546 p<.001 ES=.298	β=-.088 p=.050 ES=.017
Emotional Exhaustion	β=.054 p=.158 ES=.029	β=.029 p=.253 ES=.029	β=-.162 p=.015 ES=.026
Professional Efficacy	β=-.333 p<.001 ES=.111	β=-.182 p<.001 ES=.023	β=.029 p=.253 ES=.029
Overweight	β=-.119 p=.057 ES=.014	β=-.065 p=.114 ES=.007	β=.010 p=.406 ES=.000

CONCLUSION AND RECOMMENDATIONS

The objective of this research was to associate the three BS dimensions with the BMI among individuals with normal and overweight. To achieve this, a sample of middle and senior managers of the manufacturing industry in Ciudad Juarez, Mexico was studied. The model showing the relationships between BS and normal weight showed a significant explanatory power of 15%. Meanwhile, the model that seeks to explain the relationships between BS and overweight reported only 1% of significant explanatory power. Tables 17 and 18 present the conclusions concerning the hypothetical relations between BS and normal weight and between BS and overweight, respectively.

The results can be compared with previous studies conducted under a similar focus. For instance, according to Koppes, Meijer, and Bemelmans (2013), Emotional Exhaustion as a dimension of BS can be associated with eating disorders and stress, which in turn have an impact on the presence of both overweight and obesity. Also, Montiel (2014) and Barattuci (2011) reported that industrial workers and managerial positions in general tend to skip meals often or replace them by caffeinated, soft drinks, and/or unhealthy foods. Unfortunately, such foods have a strong impact on anxiety and stress. Finally, authors such as Ahola (2012) and Camacho et al. (2015) point out that Professional Efficacy can be directly related to weight loss because individuals are more active. However, Emotional Exhaustion increases the likelihood of suffering from overweight or obesity, since eating habits are usually altered. In other words, as a result of being tired, it is common to skip meals, eat at wrong times, or make poor choices regarding the quality of meals (fast foods, greasy foods…).

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Table 17. Conclusions regarding the relationships between Burnout and Normal Weight

	NORMAL WEIGHT		
	Explained Variance= 15%		
Hypothesis	**P and β values**	**Conclusions**	**Decision**
H1: There is a relationship between Professional Efficacy and Normal Weight for middle and senior managers of the manufacturing industry in Ciudad Juárez, Chihuahua, Mexico.	P=.01 β=.22	There is enough statistical evidence to prove that this relationship is positive, since when Professional Efficacy increases by one standard deviation, Normal Weight increases by 0.22 units.	ACCEPTED
H2: There is a relationship between Emotional Exhaustion and Normal Weight for middle and senior managers of the manufacturing industry in Ciudad Juárez, Chihuahua, Mexico.	P<.01 β=-.29	There is enough statistical evidence to prove that this relationship is positive, since when Emotional Exhaustion increases by one standard deviation, Normal Weight decreases by 0.29 units.	ACCEPTED
H3: There is a relationship between Cynicism and Normal Weight for middle and senior managers of the manufacturing industry in Ciudad Juárez, Chihuahua, Mexico.	P=.07 β=.15	No statistically significant relationships were found between Cynicism and Normal Weight.	REJECTED

Table 18. Conclusions regarding the relationships between Burnout and Overweight

	OVERWEIGHT		
	Explained Variance= 1%		
Hypothesis	**P and β values**	**Conclusions**	**Decision**
H1: There is a relationship between Professional Efficacy and Overweight for middle and senior managers of the manufacturing industry in Ciudad Juárez, Chihuahua, Mexico.	P=.19 β=-.07	No statistically significant relationships were found between Professional Efficacy and Overweight.	REJECTED
H2: There is a negative relationship between Emotional Exhaustion and Overweight for middle and senior managers of the manufacturing industry in Ciudad Juárez, Chihuahua, Mexico.	P=.15 β=.08	No statistically significant relationships were found between Emotional Exhaustion and Overweight.	REJECTED
H3: There is a relationship between Cynicism and Overweight for middle and senior managers of the manufacturing industry in Ciudad Juárez, Chihuahua, Mexico.	P=.056 β=-.12	There is enough statistical evidence to prove that this this relationship is negative, because when Cynicism increases by one standard deviation, Overweight decreases by 0.12 units.	ACCEPTED

According to the results, it seems that BS barely explains or does not explain at all the variability of overweight. Is believed that is due to the fact that other aspects, such as a lack of physical activity and/or sleep, unhealthy eating habits, and genetic factors, can have a deeper impact on overweight than psychosocial factors, and therefore, they have a stronger explanatory power. On the other hand, it seems that burnout does have a strong impact on individuals with normal weight. This may happen because such people still have an ordinary life style, especially in terms of eating habits and physical activity, since their weight is not a major concern.

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As for Emotional Exhaustion, the negative relationship between this latent variable and Normal Weight seems to be congruent, since the more emotionally exhausted people feel, the less healthy they eat. Also, the positive relationship between Professional Efficacy and Normal Weight implies that efficient people are more active, and even motivated. Fortunately, both efficacy and motivation contribute a positive attitude at work.

The model that associates BS and overweight is more challenging to explain, since as previously mentioned, in addition to BS-related factors, other variables can explain the prevalence of overweight. Still, the model revealed that Cynicism has an impact on overweight, since cynicism usually entails negative attitudes, which in turn may lead to risk behaviors that can affect the BMI. Such risk behaviors include wrong eating habits, lack of physical activity, and/or unconcern about one's health.

Definitely, such results infer whether BS loses explanatory power as the BMI increases from normal weight to overweight. Indeed, psychosocial factors such as BS affect the physical health but only to a certain extent; then, when we exceed the limits, physiological variables and factors related to the life-style (lack of physical activity and/or sleep, wrong eating habits, genetic factors, etc.) may have a more prominent role when explaining the causes of overweight and obesity. However, it is important to mention that, from a preventive perspective, psychosocial factors and the perception of reality may be the ones which trigger behaviors that can eventually become unhealthy habits.

From Normal Weight to Overweight and Obesity, the line may be too blurred to go back so easily. Therefore, it is important that knowledge management contribution in this research help develop organizational strategies to promote among their employees maintain a normal weight to avoid unhealthy weight gain that compromises the individual's health and organization performance. Also, middle and senior managers must bear in mind that overweight and obesity are chronic diseases that persist, become more serious, and are difficult to eradicate if they are not properly treated and monitored. Fortunately, both conditions can be easily prevented by neutralizing those psychosocial factors that stop us from maintaining a healthy lifestyle.

As recommendations for future research, it is suggested the incorporation of other measuring instruments that can explain more in depth the occurrence of BS. Such instruments should be able to collect information regarding eating habits, physical activity, and stress coping strategies. It is also recommended to include measures of abdominal circumference. Finally, companies are advised to provide employees with personal, social and psychological support to detect indicators of stress and burnout and take the necessary preventive measures. Such strategies would contribute to a healthier lifestyle and work environment.

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Section 3
Tools and Technologies

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Chapter 25
Employee Welfare Provisions: An Administration Tool to Enhance Employee Efficiency

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ABSTRACT

Employee welfare is a prerequisite element for the success and growth of any form of organisation. The provision of welfare facilities improves the relations among the employees and the management of an organisation. These provisions boost the competence levels and value of the employees. The balance between employees' quality of life at the workplace and home is vital, as employees are the pillars of any organisation. The central aim of any organisation in adopting the welfare schemes is to secure the workforce by providing a proper work environment and minimising its hazardous effect on the employees' work life. The basic purpose of employee welfare is to enrich the lives of employees and to keep them happy and conducted. The provision of employees' welfare may be regarded as a wise investment as these would bring a profitable return in the form of greater efficiency. The chapter focuses on determining the various employee welfare provisions adopted by different private organisations and its influence on the employee's satisfaction and effectiveness.

INTRODUCTION

Welfare is a comprehensive term that refers to the physical mental, moral and emotional well-being of an individual (Aswathappa, 2010). Labour is every physical or intellectual activity applied in engineering production and the one who performs it as an employee. The concept of employee welfare is flexible and elastic. It extensively changes with times, regions, industry, country, social values, customs, beliefs, the degree of industrialization, social economic development of people and political ideologies prevailing at that moment. Coventry and Barker (1988) state that employee welfare includes provision of social club and sports facilities, supervising staff, canteens, running sick clubs, savings schemes, dealing with

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superannuation, pension funds, leave grants, making loans on hardship cases, making long service grants, assistance to staff transferred to another area, providing fringe benefits, arranging legal aid and giving advice on personal problems.

Employee welfare has two negative aspects and positive aspects. On the negative side, employee welfare is concerned with counteracting the baneful effects of the large-scale industrial system of production especially capitalistic, and so far as India is concerned with the person or family, and social life of an employee. On its constructive part, welfare deals with the provision of opportunities to the employees and their families for a good life (Moorthy, 1968). Welfare measures should be provided by the organizations, whether public or private sector as it raises the morale of employees, reduce the risk and insecurity, eliminate turnover and absenteeism, and increase the production and productivity. Thus, improving the quality of working life by providing the employee welfare facilities would go a long way in achieving the goals of an organization (Patro, 2017a).

Employees have always been central to organizations, and their strategic importance is growing in today's knowledge-based industries. Employee welfare is an important fact of industrial relations, the extra dimension, giving satisfaction to the worker in a way that even a good wage cannot. Employee welfare is an important aspect of any industry. It acts as social security measures that contribute to improving the condition under which workers are employed. Employee welfare facilities in the organization affect the behavior of the employees as well as on the productivity of the organization. The management should provide good facilities to all employees in such a way that employees become satisfied and they work harder and more efficiently and effectively (Choudary, 2017). In the current scenario, the welfare schemes are provided to the employees to retain talented and skilled employees. Thus, employee welfare is very comprehensive and embraces activity provided by employers, state and central governments, trade unions and other agencies to help employees and their families to lead a contented work life. The welfare schemes change the way employees lead their quality life at the workplace as well as at home. The important question is whether the welfare schemes adopted by the companies have an impact on the employees' work life and their satisfaction (Patro, 2017b). Thus, employee welfare is a comprehensive term including various services, benefits, and facilities offered to employees by the employers. Through such generous fringe benefits, the employer makes life worth living for employees. The welfare amenities are extended by in addition to normal wages and other economic rewards available to the employees as per legal provisions. The welfare measures need not be monetary but in any kind/form. This includes items such as allowances, housing, transportation, medical insurance, and food. Employee welfare also includes monitoring of working conditions, the creation of industrial harmony through infrastructure for health, industrial relations and insurance against disease, accident, and unemployment for the workers and their families.

The chapter focuses on identifying the various welfare measures adopted by the companies for motivating the employees. Further, examines the influence of welfare provisions on employees' satisfaction and its impact on the effectiveness of the organization. Therefore, assortments of both statutory and non-statutory welfare provisions that can be provided by the companies according to the industrial acts are discussed for a better understanding.

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BACKGROUND

Employee welfare provision is an imperative facet of organizational relations giving satisfaction to the worker in a means that even a good wage cannot. With the growth of industrialization and mechanization, welfare provisions have gained additional importance in the organization (Monappa, 1995). The report of the Committee on Labour welfare (GOI, 1969) includes the services such as adequate canteens, rest and recreation facilities, sanitary and medical facilities, arrangements for travel to and from work and for the accommodation of workers employed at a distance from their homes and such other services, amenities and facilities including social security measures as contribute to improve the conditions under which worker is employer. An employee cannot survive with the pace of modern life amid minimum available amenities. He needs added motivation to keep body and soul together at the workplace. The management has realized the importance of their role in providing these additional amenities to the employees (Patro, 2012). Many organizations have adopted welfare schemes as a strategy for improving the efficacy of employees since work-related troubles can lead to poor quality of work life and a decline in their performance (Manzini & Gwandure, 2011). Welfare facilities can be adapted to secure the workforce by providing appropriate human working conditions by minimizing the hazardous effect on the life of the employees and their family members. Employees' are the assets of any organization, so, the desires and necessities of the employees need to be satisfied to meet the goals of the organization (Patro, 2016a).

Any organization can operate effectively only when there is a high degree of coordination and cooperation between the employees and the management. The structure of a welfare state rests on its social security fabric. Government, employers, and trade unions have done a lot to promote the betterment of worker's conditions (Joseph et al., 2009). Patro (2017c) suggested that the existing welfare schemes may be improved further as they enrich the employee's standard of living and their satisfaction levels. New schemes and facilities should be added to existing ones to improve the efficiency and quality of work life of the employees by the management of all organizations. Therefore, welfare measures are considered as critical indicators that influence the performance of an employee. Satyanarayna & Reddi (2012) stated that the welfare measures which enrich the employees' standard of living and increase their satisfaction levels are to be necessarily provided by the organizations. Parul & Kumar (2013) concluded in terms of proving that the different welfare provisions provided to the employees working in an organization under the Factories Act, 1948 are having a positive relationship with employee satisfaction.

Patro (2015) in a comparative analysis of welfare measures in the public and private sector found that an employees' welfare facility is the key dimension to a smooth employer-employee relationship. The management provided all the health safety and welfares to the employees that helped to produce better performance in the work and working environment. The companies with strong employee relations initiatives will benefit because their workforce is highly motivated to expend their best efforts it involves providing fair and consistent treatment to all employees so that they will be committed to the organization (Gomez-Mejia et al., 2001). Jain (2016) study revealed that the employees were satisfied with existing welfare facilities like allowances, medical facilities, quality of work life, safety and security. Overtime allowances and canteen facilities were the two main areas where improvements are required. Culpepper (2009) found that implementing a pay for performance system has been shown to resolve organizational problems because it aligns the preferences of firms and employees. Also, creating pay for performance system serves as a sorting mechanism to identify and attract the most capable employees. This type of system has shown that individual pay incentives significantly improve productivity.

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Nanda & Panda (2013) stated the Rourkela steel plant has adopted a better class of welfare activities that create an effective working environment and thus, better productivity. There are different kinds of welfare schemes like medical allowance, death relief funds, insurance, housing, transportation, and recreation club facilities, etc., are provided by the company to the employees to maintain better industrial relations. Neetha (2001) focused on the temporal changes in the labor process and the division of labor with a special emphasis on gender in the structure of the knitwear industry. Further, slowly the production relations are becoming more and more informal and the process has led not only to informalization of the workforce but also to the feminization and disorganization of the workforce. Logasakthi & Rajagopal (2013) found that the employees are not only satisfied with their jobs but also enjoyed the various facilities provided by the companies. The employees also extended their maximum support for the improvement of the company and also retain the employees for a long period (Patro & Raghunath, 2016). Sahoo & Sahoo (2018) identified that the variables interpersonal relationships, a safe and healthy work environment, and employee welfare were significant predictors of cordial employee relations.

Patel et al. (2017) found that there is no significant relationship between the satisfaction level of the employee having different age and designation level with welfare measures. There should be more emphasis on employees' welfare and it must be in a continuous manner, such measures will motivate employees and also increased their involvement in the job due to which Industrial growth will possible. Kumar and Yadav (2002) revealed that the overall satisfaction level of workers on welfare schemes was low in both the private and State sugar factories. The key behaviors which included belief in the organisation, desire to work to make things better, understanding of the business context and the 'bigger picture', being respectful of and helpful to colleagues, willingness to 'go the extra mile' and keeping up to date with developments in the field were found to be associated with employee engagement (Robinson et al., 2006). Ahmed (2018) stated that some welfare facilities are better in the public sector and some welfare facilities in the private sector. The canteen facility, latrine, and urinal facility, recreational facility, library facility, gymnasium facility, cultural activity, and training facility are better in the public sector compared to the private sector. On the other hand, restroom facility, drinking water facility, medical and first aid facility, washing facility, seating facility, transportation facility, housing facility, and educational facility are better in the private sector compared public sector organizations.

Motivating employees begins with recognizing that to do their best work, people must be in an environment that meets their basic emotional drives to acquire, bond, comprehend, and defend (Nohria et al., 2008). Sailesh (2012) stated that employee welfare measures increase the productivity of the organization and promote healthy industrial relations thereby maintaining industrial peace. Organizations provide welfare facilities to their employees to keep their motivation levels high. Business houses provide many such statutory and non-statutory things policies to maintain a satisfactory level of their employees. When they get better canteen facilities, good water to drink, clean restrooms, clean and hygienic washrooms, and bathrooms, regular medical checkups, health insurance, employee assistance program, grievance handling department, better facilities to sit or good workplace gives the employee a high level of satisfactory level. Kumar and Kumar (2018) study identified that the majority of the workers are satisfied by the various statutory welfare measures implemented by the organization. There is a relationship between Welfare measures implemented and workers satisfaction.

Patro (2019) stated that a satisfied employee is a key factor, who acts as the organization's ladder for success. Thus, good employee relations help in developing a satisfied, committed and productive workforce that leads towards the overall effectiveness of an organization.

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NEED FOR EMPLOYEE WELFARE PROVISIONS

The Indian companies have greater need and importance of adopting employee welfare provision than any other country. Certain deficiencies in the Indian workforce are not found in other countries. The reason why employees' rights and welfare are very significant is that employees need to work in places where the environment is devoid of tension and rancor to be productive. The welfare provisions should also be provided based on the feeling of care and compassion to the employees considering that some of them will spend the whole of their life working for the organization (Hartman et al., 2004). The conducive, safe and healthy work environment will enable workers to give their best and perform effectively and efficiently (Jaskiewicz & Tulenko, 2012). While some organizations are taking the responsibility to provide welfare facilities and services, others are avoiding them. The perception of those companies not providing welfare facilities for their employees is that it is an unnecessary burden to them. The provision of welfare facilities is however mandatory under most company's law and must be statutorily provided.

Even today in some economies, the employees are not united into a class and the employee union associations are still in its infancy. If the employees' union does exist, there is a lack of enlightened leadership and there is no unity between these unions themselves. In the absence of well-organized employee unions, the workers can place their demands effectively neither before the employer nor can systematically think of their interests. Due to this lacking force, it is essential to focus on the employee welfare provisions by the employers and the Government. Due to the inadequate level of wages, the employees cannot comfortably settle down in one place or region, which may, in turn, give rise to absenteeism. The employees' migratory tendency can be curbed by providing them with adequate facilities and conditions, and this also shows a positive effect over the absenteeism in the organization. Healthy recreation should also be given priority as the efficiency of the workforce is diminished by energy being employed in all kinds of undesirable channels. Hence, it is essential that the recreation and enjoyment of a healthy kind be provided.

As the welfare of an employee at the workplace will not only enhance their work efficiency but also improve the willingness to perform their job involving themselves within the work environment. The welfare provisions help to maintain health and skills, avoids exploitation of the worker by the employer, increases the happiness of workers, and motivates the workers at the workplace. In India, most of the companies are not adopting the welfare measures properly at their workplace. The companies compel workers to work in uncomfortable/ adverse conditions. Their uncomfortable conditions lead to serious damages to the employee. Therefore, maintenance of employee welfare previsions is a must in the identity premises.

CATEGORIES OF EMPLOYEE WELFARE PROVISIONS

Modern and civilized societies contemplate workers as human beings entitled to the protection of the law and government (Steiner, Alston, & Goodman, 2008). The employees are deserved to be treated with dignity and respect irrespective of their position in the workplace. Employees are not slaves but are free born using their skills to contribute to the growth and development of an organization (Drescher, 2004). Therefore, they deserve ample welfare facilities and services which should be provided by the employers in addition to wages and salaries. The committee of experts on welfare facilities for employees categorized welfare measures (International Labour Organisation,1963) as statutory measures (intramural

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facilities) and non-statutory measures (extramural facilities), and mutual facilities. It is very difficult to classify the welfare activities into certain broad categories. Some of the facilities under statutory and non-statutory welfare measures are shown in Table 1.

Statutory Welfare Measures

Under this category, welfare facilities are provided according to the labor legislation passed by the Government. The nature and coverage of these facilities vary from country to country. These facilities must be provided by all the employers and cannot be ignored. Any contravention of the statutory provisions shall render the employer punishable under the Act concerned. According to the National Commission of Labour, the statutory measures are divided under two distinct heads:

- Facilities have to be provided irrespective of the size of the establishment.
- Facilities are to be provided subject to the employment of a specified number of persons.

The provisions provided inside the premises of the establishments are known as intramural facilities. These facilities include activities relating to minimization of industrial fatigue, provision of safety measures like fencing and covering of machines, good layout of the plant and machinery, sufficient lighting conditions,provision of first aid appliances, sanitary facilities, crèches, rest shelters, canteens, drinking water, prevention of fatigue, health services including occupational safety, administrative arrangements, uniforms and protective clothing, shift allowance, etc. Provisions of such facilities are also obligatory in all industrial establishments all over the world.

Non-Statutory Welfare Measures

Under this category, it is not mandatory for the companies to provide the welfare facilities to the employees. The provision of these facilities is voluntary. Earlier, due attention was not given to the provision of extramural facilities to the workers but now it is realized that these facilities are very important for the general welfare and upliftment of the employees. The welfare provisions offered to the workers outside the establishment are known as extramural facilities. They include better housing accommodations, educational facilities, maternity benefit, social insurance measures, sports, and cultural activities, library or reading room, leave travel facilities, workers co-operative credit societies, welfare programs for women, youth and children and transport facilities, etc. No doubt, the activities under this category ultimately lead to an increase in the efficiency of workers.

Mutual Welfare Facilities

These facilities are usually outside the scope of the statutory facilities. These activities are voluntarily undertaken by the workers themselves for their interests. As such the employer has no say in it.

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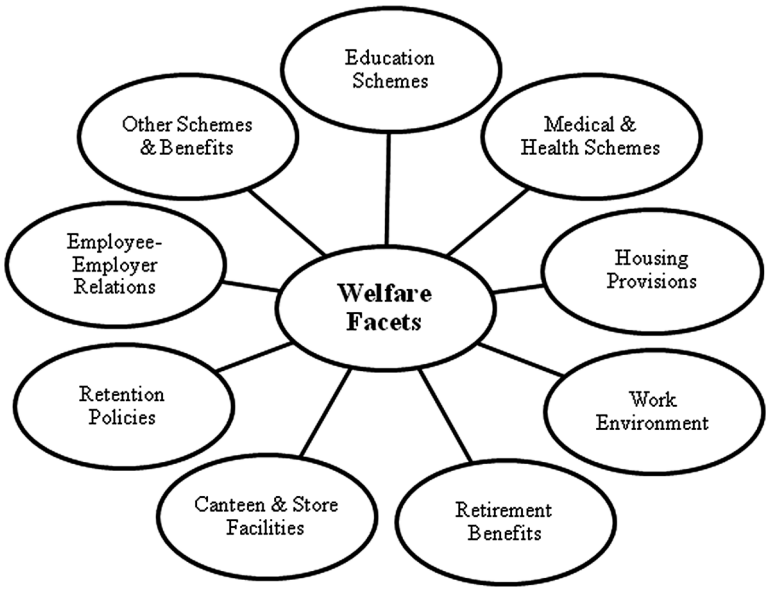
Table 1. Categories of welfare provisions

Statutory Facilities	Non-Statutory Facilities
Drinking Water Canteens Toilets Crèche Facilities for storing and drying clothing Facilities for sitting First-aid appliances Shelters, restrooms, and lunch rooms Washing facilities Occupational Safety Uniform and protective clothing Shift Allowance Welfare officers	Economic Services Recreational Services Facilitative Services Housing Facilities Education Facilities Leave Travel Concession Social Insurance (gratuity, pension, PF) Benevolent Fund Maternity Benefits Health and Medical Facilities Vocational Training Workers Cooperatives

FACETS OF WELFARE PROVISIONS

Employees play an essential role in the development of any organization. Therefore, the management of the companies has to adopt welfare measures to get benefited in accomplishing the objectives. The benefits of employee welfare measures are more direct to the employees than the organization. However, it is important for the company to generate various employee welfare schemes to retain the employees (Patro, 2014). The different welfare facets identified are as shown in Figure 1.

Figure 1. Welfare facets



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1. **Education Schemes:** Education schemes play a very important role in motivating and enabling the progress of employees for their mental and physical development. The educational needs in any organization are two-fold i.e., adult/employee education schemes and schools/colleges for their children. The educational benefits that can be provided by the private companies include, sponsoring for employees' higher education or permission for part-time education, reimbursement of children tuition fees, schools or colleges in the organization premises, and training & development programs (Patro, 2017d).
2. **Medical and Health Schemes:** The employees' health should be given utmost importance, as it also results in the development of an organization. Health care for employees helps to reduce the incidence of sickness, absenteeism and increases their efficiency and productivity (Patro & Raghunath, 2018). The organizations can provide medical facilities to the employees and their family members also. The management can offer facilities like medical fees reimbursement, maternity leaves or benefits, provision of emergency services, and frequent medical checkups, to the staff members. These facilities create a healthy work-life for the employees.
3. **Housing Provisions:** Housing facility has a direct bearing on the health and efficiency of the employees. The provision of quarter facilities at low cost with basic amenities such as adequate space, ventilation, electricity facilities, water facility, transport facility, maintenance facilities (roads, lighting, drainage systems, lavatories), and other sanitary arrangements. The organizations may also provide a housing allowance to the employees (Patro, 2017c). These facilities enhance the quality of life of the employees.
4. **Work Environment:** A positive work environment makes employees feel good about coming to work, and this provides the motivation to sustain them in the organization. The management should provide information and resources to assist their employees to make healthy lifestyle choices and to achieve and maintain good health. It promotes work-life balance by creating a healthy physical, social and psychological work environment as a core business goal (Rao et al., 2015). A healthy work environment makes the employees' more satisfied and improves their work efficiency. The companies can provide good environments such as a safe and secure environment, autonomy at work, restroom and locker facilities, workload and Job stress.
5. **Retirement Benefits:** The retirement benefit is one the important welfare scheme, which is to be provided to the employees in any organization. These benefits increase the satisfaction level of the employees towards the organizations and motivate them to achieve the organizational objectives. The companies can attempt to provide benefits such as a pension, gratuity and provident fund benefits, retirement or death compensation, and other post-retirement benefits (Patro, 2017c). These facilities will make the staff members motivated towards the management and in increased efficacy.
6. **Canteen and Store Facilities:** Cafeteria or canteens shall be provided by the employer so, as to provide hygienic and nutritious food to the employees. It is a method of creating more satisfactory working and living conditions for the employees working in an organization. This welfare measure would greatly reduce turnover and absenteeism among workers and improves workers efficiency to a greater extent and also create a permanently settled workforce by making service attractive to the employee (Patro, 2017c). This facet includes the facilities like the subsidized cost of food items and stores, precise and clean drinking water, maintenance of cleanliness and quality of food items that can be made available to the staff members.

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7. **Retention Policies:** Employee retention has become the most critical issue for all types of organizations as a result of the shortage of skilled labor, economic growth, and employee turnover. Retention of employees is an important element in providing welfare schemes. Employee retention involves taking measures to encourage employees to remain in the organization for a maximum period. The retention policy helps the management of the organization in reducing the cost of turnover, loss of company knowledge, interruption of work, regaining the efficiency and increases the productivity of the organization (Patro, 2016b). This policy includes better compensation packages, trust on employees' capability, provide growth opportunities, promotion and incentive Policies.
8. **Employee-Employer Relation:** There is a common saying that 'Employees leave their bosses, and not their jobs', which is true because the relationship with the management and the peers becomes often the reason for an employee to leave the organization. The management is sometimes not able to provide an employee with a supportive work culture and environment in terms of personal or professional relationships (Patro, 2019). The facet includes the factors like transparent and open communication, cooperation by management or superior, recognition and appreciation of hard work, grievance settlement forums.
9. **Other Schemes and Benefits:** The other welfare schemes or benefits must be provided to the employees, which in turn will help them to increase their satisfaction and quality of work life. These facilities motivate the employees towards management and increase their work efficiency. The other benefits may include recreation facilities, post office, and bank facilities, cooperative or credit societies, and group insurance schemes. These facilities also enhance the employees' satisfaction and lead quality work life.

FRAMEWORK AND HYPOTHESES

The welfare provisions change the way employees lead their work life in the companies and as well as at home. The question is would the welfare provisions have an impact on the employees' work life. Therefore, an inquiry into the employees' response to the various welfare provisions adopted in the companies has become essential. The various statutory and non-statutory welfare provisions adopted by the private companies according to the Industrial Acts are discussed in the framework as shown in Figure 2.

For the purpose the following hypotheses are framed:

$\mathbf{H_1}$: Education schemes do not show a significant effect on employees' efficiency.
$\mathbf{H_2}$: Medical & Health schemes do not show a significant effect on employees' efficiency.
$\mathbf{H_3}$: Housing provisions do not show a significant effect on employees' efficiency.
$\mathbf{H_4}$: Work environment does not show a significant effect on employees' efficiency.
$\mathbf{H_5}$: Retirement benefits do not show a significant effect on employees' efficiency.
$\mathbf{H_6}$: Canteen & store facilities do not show a significant effect on employees' efficiency.
$\mathbf{H_7}$: Retention policies do not show a significant effect on employees' efficiency.
$\mathbf{H_8}$: Employee-employer relations do not show a significant effect on employees' efficiency.
$\mathbf{H_9}$: Other schemes & benefits do not show a significant effect on employees' efficiency.

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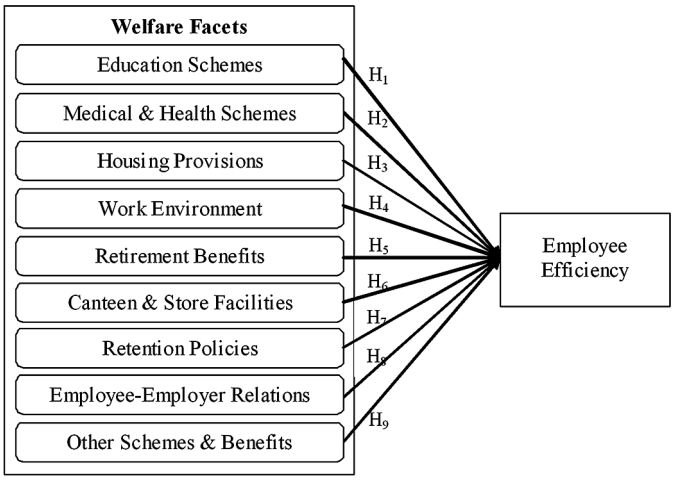
Figure 2. Welfare provisions framework



METHODOLOGY

The chapter enquires into the welfare provisions adopted by different private sector companies and the satisfaction experienced by the employees working in these organizations. The identified welfare facets having an impact on the employees' satisfaction at the workplace and their work life are examined. The required data were collected from both primary and secondary sources. The secondary data was collected from books, journals, magazines, unpublished thesis and institution websites to know the various welfare provisions adopted in the private sector companies. The primary data resources are collected using a survey method from the employees working in different private companies of Visakhapatnam city, India. The survey was conducted for a period of one month during March 2016. To get the required data, a structured questionnaire was designed and distributed to the employees through emails and some respondents are approached personally. The purpose of the survey was explained to the respondents and was assured of the confidentiality of their responses. A total of 290 valid responses were considered for statistical data analysis.

To measure the satisfaction level of the employees, a 5-point Likert rating scale technique was used ranging from Highly Satisfied (5) to Highly Dissatisfied (1). For evaluating the responses inferential statistics are used to make a conclusion based on the results and significance. Descriptive analytical tools such as mean, standard deviation, standard error, and t-values were used to summarize the respondents' opinions. The nine facets were tested for their relationship with employee's satisfaction using correlation and the hypotheses are tested using ANOVA analysis.

STATISTICAL DATA ANALYSIS

To examine the employees' perception towards the welfare provisions adopted by the companies, nine imperative welfare facets like housing schemes, education schemes, medical schemes, work environment, retirement schemes, canteen facilities, retention schemes, employee-employer relation, and other schemes are identified. The descriptive statistic results regarding the employees' satisfaction towards

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welfare provisions are shown in Table 2. The respondents are 59 percent (172) male and 41 percent (118) female. The mean scores, standard deviation, t-values, factor loadings, average variance extracted, composite reliability and Cronbach's' alpha are computed as shown in the table. The Cronbach's' alpha value reveals that all the variables are having internal consistency as they are above 0.90 falling in the category of superb. The composite reliability values also show the validity of the variables is above 0.80.

The statistics show that the overall mean values are in the range of 2.20 – 3.41 which indicates that the satisfaction level of the employees towards welfare provisions is average. The standard deviation values range from 0.729 – 1.113. In the case of education schemes, training & development programs (3.23) got the highest rating followed by the provisions sponsoring for employees' higher education (2.21), reimbursement of children tuition fees (1.70), and schools or colleges in organization premises (1.68). Regarding medical & health schemes the provisions frequent medical checkups (3.08) secured the highest rating from the respondents followed by the provision of emergency services (2.96), maternity leaves or benefits (2.51), and reimbursement of medical expenses (1.73). Concerning housing provisions, transport facility or allowances (3.40) got higher rating followed by the provisions housing allowances (2.86), hygiene or maintenance services (2.76), and provision of staff quarters (2.03) by the respondents. In the case of the work environment, restroom and locker facilities (3.54) scored the highest rating from the respondents followed by the safe and secure environment (3.34), autonomy at work (3.10), and workload and job stress (2.86).

The respondent's opinion on retirement benefits reveals that the provisions gratuity & provident fund benefits (3.15) secured the highest rating from the respondents followed by retirement or death compensation (2.01), post-retirement benefits (1.91), and pension benefits (1.71). In the case of canteen & store facilities the provisions precise and clean drinking water (3.85) got the highest rating followed by quality of food items (3.50), store facilities (2.83), and subsidized cost of food items (2.79) by the respondents. About retention policies, promotion and incentive policies (2.99) secured the highest rating by the respondents followed by the provisions trust on employees' capability (2.83), better compensation packages (2.76), and providing growth opportunities (2.28). Regarding employee-employer relations, cooperation by management or superior (2.59) got a higher rating from the respondents followed by the provisions recognition and appreciation of hard work (2.53), transparent and open communication (2.29), and grievance settling forums (2.20). In the case of other schemes & benefits, post office and bank faculties (2.76) secured the highest rating from the respondents followed by the provisions group insurance schemes (2.71), recreation facilities (2.51), and cooperative/credit societies (2.36).

The respondents' opinion on the employees' efficiency reveals that welfare provision helps in overall growth of employees (3.96) got the highest rating followed by the variables welfare provisions to increase the competencies of employees(3.86), welfare provisions are effectively adopted by the company (3.15), and satisfied with the welfare provisions of the company (2.65).

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Table 2. Summary of responses on employees' efficiency (n=290)

Welfare Facets		Mean	Std. Deviation	t	Factor Loadings	AVE	CR	CA
Education Schemes		***2.21***	***0.738***	***25.64***		***0.644***	***0.878***	***0.92***
	Sponsoring for employees' higher education	2.21	1.027	19.26	.786			
	Reimbursement of children tuition fees	1.70	0.604	25.18	.825			
	Schools or Colleges in organization premises	1.68	0.497	30.12	.888			
	Training & Development Programmes	3.23	1.031	27.98	.699			
Medical & Health Schemes		***2.57***	***0.958***	***23.26***		***0.549***	***0.829***	***0.95***
	Reimbursement of medical expenses	1.73	0.616	25.06	.796			
	Maternity leaves or benefits	2.51	1.114	20.18	.766			
	Provision of Emergency services	2.96	1.163	22.78	.686			
	Frequent medical checkups	3.08	1.100	25.01	.711			
Housing Provisions		***2.76***	***0.893***	***27.79***		***0.526***	***0.816***	***0.97***
	Provision of Staff Quarters	2.03	0.856	21.15	.747			
	Housing Allowances	2.86	0.990	25.85	.703			
	Hygiene or Maintenance services	2.76	0.889	27.78	.714			
	Transport facility or allowances	3.40	0.836	36.38	.737			
Work Environment		***3.21***	***0.859***	***34.65***		***0.576***	***0.844***	***0.96***
	Safe and secure environment	3.34	0.913	32.69	.726			
	Autonomy at work	3.10	0.880	31.50	.786			
	Restroom and locker facilities	3.54	0.680	47.87	.819			
	Workload and Job stress	2.86	0.964	26.55	.698			
Retirement Benefits		***2.20***	***0.729***	***27.08***		***0.531***	***0.817***	***0.94***
	Pension Benefits	1.71	0.508	30.15	.851			
	Gratuity & Provident Fund Benefits	3.15	0.873	32.28	.656			
	Retirement or Death compensation	2.01	0.819	21.98	.736			
	Post retirement benefits	1.91	0.715	23.92	.654			
Canteen & Store Facilities		***3.24***	***0.889***	***34.95***		***0.582***	***0.846***	***0.93***
	The subsidized cost of food items	2.79	0.910	27.40	.633			
	Precise and Clean Drinking water	3.85	0.618	55.69	.762			
	Quality of food items	3.50	0.928	33.74	.829			
	Store facilities	2.83	1.100	22.98	.812			
Retention Policies		***2.72***	***1.053***	***23.20***		***0.571***	***0.841***	***0.96***
	Better compensation packages	2.76	1.245	19.84	.769			
	Trust on employees' capability	2.83	0.965	26.19	.677			
	Providing growth opportunities	2.28	0.954	21.32	.864			
	Promotion and Incentive Policies	2.99	1.049	25.46	.699			
Employee-Employer Relations		***2.40***	***1.013***	***21.32***		***0.741***	***0.920***	***0.98***
	Transparent and Open communication	2.29	0.903	22.66	.876			

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Table 2. Continued

Welfare Facets		Mean	Std. Deviation	t	Factor Loadings	AVE	CR	CA
	Cooperation by Management or Superior	2.59	1.110	20.84	.877			
	Recognition and Appreciation of hard work	2.53	1.147	19.69	.839			
	Grievance settling forums	2.20	0.892	22.07	.851			
Other Schemes & Benefits		***2.59***	***1.130***	***20.59***		***0.709***	***0.907***	***0.98***
	Recreation facilities	2.51	1.091	20.60	.894			
	Post Office and Bank faculties	2.76	1.265	19.53	.777			
	Cooperative/Credit Societies	2.36	1.128	18.74	.838			
	Group Insurance Schemes	2.71	1.034	23.47	.856			
Employee Efficiency		***3.41***	***1.113***	***23.13***		***0.517***	***0.810***	***0.91***
	Welfare provisions are effectively adopted by the company	3.15	1.008	27.96	.664			
	Satisfied with the welfare provisions of the company	2.65	1.170	20.25	.676			
	Welfare provisions increase the competencies of employees	3.86	1.386	16.54	.812			
	Welfare provision helps in the overall growth of employees	3.96	0.889	27.78	.714			
Note: All the t-values are significant at the 0.01 level (2-tailed)								

AVE-Average Variance Extracted, CR-Composite Reliability, CA-Cronbachs' Alpha

From Table 2, it can be observed that all the t-values are significant at ($p < 0.01$) significance level (2-tailed). The analysis show that the respondents are highly satisfied with the canteen & store facilities (3.24) followed by the provisions work environment (3.21), housing provisions (2.76), retention policies (2.72), other schemes & benefits (2.59), medical & health schemes (2.57), employee-employer relations (2.40). The low satisfied welfare provisions are education schemes (2.21) and retirement schemes (2.20). The respondents rating towards the employees' efficiency 3.41 shows a positive rating towards the welfare provisions adopted by the private companies. The factor loadings ranged from 0.633 – 0.894 reveal that all the provisions have a positive influence on the employees' satisfaction and efficiency. The average variance extracted (AVE) values shows that employee-employer relations (0.741) got the highest variance whereas, employee efficiency recorded (0.517) lowest variance.

The summary of the t-test indicates that all the welfare facets have a significant relationship with the employees' satisfaction and efficiency. The t-values with the significance levels (2-tailed), mean differences, and a 99 percent confidence interval of difference at the upper and lower level are shown in Table 3. The analysis show that the highly influential welfare facet is canteen & store facilities (35.203) followed by the welfare facets work environment (35.472), employee efficiency (33.851), housing provisions (28.997), retirement benefits (28.727), education schemes (26.706), retention policies (24.298), medical & health schemes (23.984), employee-employer relation (21.839), and other schemes & benefits (21.131).

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Table 3. Summary of one-sample t-test

Welfare Facets	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Education Schemes	26.706	289	.000	2.203	2.04	2.37
Medical & Health Schemes	23.984	289	.000	2.569	2.36	2.78
Housing Provisions	28.997	289	.000	2.763	2.57	2.95
Work Environment	35.472	289	.000	3.234	3.05	3.42
Retirement Benefits	28.727	289	.000	2.197	2.04	2.35
Canteen & Store Facilities	35.203	289	.000	3.241	3.06	3.42
Retention Policies	24.298	289	.000	2.713	2.49	2.93
Employee-Employer Relation	21.839	289	.000	2.400	2.18	2.62
Other Schemes & Benefits	21.131	289	.000	2.588	2.34	2.83
Employee Efficiency	33.851	289	.000	3.038	2.86	3.22

Note: All the t-values are significant at the 0.01 level (2-tailed)

Table 4. Inter-item correlation matrix

Welfare Facets	1	2	3	4	5	6	7	8	9	10
Education Schemes	1.000									
Medical & Health Schemes	.982	1.000								
Housing Provisions	.967	.974	1.000							
Work Environment	.952	.959	.968	1.000						
Retirement Benefits	.972	.958	.950	.922	1.000					
Canteen & Store Facilities	.956	.966	.968	.965	.926	1.000				
Retention Policies	.962	.974	.980	.962	.939	.979	1.000			
Employee-Employer Relation	.914	.928	.943	.910	.905	.944	.969	1.000		
Other Schemes& Benefits	.930	.951	.952	.919	.914	.956	.981	.975	1.000	
Employee Efficiency	.961	.966	.943	.955	.924	.954	.944	.867	.895	1.000
All Correlation values are significant at the 0.01 level (2-tailed)										

The inter-item correlation between the welfare facets was also examined and found that all the paired correlation measures are significant at $p < 0.01$ level (2-tailed), as shown in Table 4. Therefore, the validity of the research has been achieved to a satisfactory level.

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RESULTS AND DISCUSSION

The statistical significance of all welfare facets was examined to determine the validity of the hypothesized paths. The results of the model summary, ANOVA, and regression coefficient values for the relationship between employee welfare facets and employee efficiency are discussed.

Table 5. Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.984[a]	.969	.965	.18663
a. Predictors: (Constant), education schemes, medical & health schemes, housing provisions, work environment, retirement benefits, canteen & store facilities, retention policies, employee-employer relation, other schemes & benefits				

The model summary Table 5 reveals that the linear regression coefficient (R=0.984) indicates that there is a maximum correlation between the dependent and independent variables. In terms of variability R-Square (0.969) shows that the independent variables education schemes, medical & health schemes, housing provisions, work environment, retirement benefits, canteen & store facilities, retention policies, employee-employer relation, and other schemes & benefits can predict 97 percent of the variance in the factor employee efficiency.

Table 6. ANOVAa

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	76.234	9	8.470	243.193	.000[b]
Residual	2.438	280	.035		
Total	78.672	289			
a. Dependent Variable: Employee Efficiency					
b. Predictors: (Constant), education schemes, medical & health schemes, housing provisions, work environment, retirement benefits, canteen & store facilities, retention policies, employee-employer relation, other schemes & benefits					

The results of the ANOVA test shown in Table 6 indicates that the dependent variable employee efficiency (F=243.193, p=0.000 < 0.01) show a significant relationship with the independent variables education schemes, medical & health schemes, housing provisions, work environment, retirement benefits, canteen & store facilities, retention policies, employee-employer relation, and other schemes & benefits.

The coefficient results shown in Table 7 reveal that the education schemes have a significant positive relationship with the employee's efficiency (β=0.214; p=0.038 < 0.05) providing strong support for the rejection of the hypothesis H_1. Medical & health schemes show a significantly positive influence on employee efficiency (β=0.546; p=000 < 0.01), not supporting the null hypothesis H_2. The housing provisions have a positive significant relationship with the employees' efficiency (β= 0.231; p=0.028 < 0.05) rejecting the null hypothesis H_3. Work environment shows a strong positive significant impact on employees' efficiency (β= 0.129; p=0.026 < 0.05) thus, H_4 is also not supported. Moreover, the

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retirement benefits are having a significant positive impact on employee's satisfaction and efficiency (β= 0.025; p=0.038 < 0.05), hence H_5 is not supported. The canteen & store facilities also have a strong positive significant relationship with the employee's efficiency (β= 0.377; p=0.002 < 0.05), rejecting the null hypothesis H_6. The retention policies adopted by the management also significantly influencing the employees' efficiency (β= 0.691; p=0.002 < 0.05), hence H_7 is not supported. Employee and employer relations were found significantly influencing an employee's efficiency (β= 0.376; p=0.001 < 0.05), so the hypothesis H_8 is not supported. Finally, other schemes & benefits (β= 0.371; p=0.012 < 0.05) also show a significant positive relationship with employees' satisfaction and efficiency, hence not supporting the hypothesis H_9. Thus, the regression analysis results provide a strong support for the rejection of the null hypothesis relating to the relationship between independent variables education schemes, medical & health schemes, housing provisions, work environment, retirement benefits, canteen & store facilities, retention policies, employee-employer relation, other schemes & benefits with the dependent variable employee efficiency.

Table 7. Coefficients [a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.563	.175		3.222	.002
Education Schemes	.290	.193	.214	1.499	.038
Medical & Health Schemes	.569	.151	.546	3.772	.000
Housing Provisions	.271	.154	.231	1.760	.028
Work Environment	.157	.129	.129	1.222	.026
Retirement Benefits	.037	.138	.025	0.268	.038
Canteen & Store Facilities	.457	.142	.377	3.233	.002
Retention Policies	.691	.216	.691	3.204	.002
Employee-Employer Relation	.382	.107	.376	3.555	.001
Other Schemes & Benefits	.338	.131	.371	2.584	.012
a. Dependent Variable: Employee Efficiency					

Note: All the t-values are significant at 0.01 and 0.05 level

The welfare provisions such as housing schemes, education benefits, retirement benefits, medical benefits, retention policies, and the working environment have a strong significant influence on the employees' efficiency. Therefore, the welfare provisions are considered as a critical factor in influencing the work life of the employees. Proper implementation of both statutory and non-statutory welfare measures increases the employees' work efficiency and therefore, helpful in the overall development of the organization.

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ADOPTION OF WELFARE PROVISIONS

The theories of labor welfare have evolved over the years. Before, the government had to compel the industrial organizations to provide basic amenities to their employees (Erasmus, 2008). Such compulsion was necessary because the employers used to exploit employees and treated them unfairly. The basic objective of employee welfare is to enable workers to live a richer and more satisfactory life. Adopting the welfare facilities depend on the management of an organization. It is based on the approach of the organization on how best it has organized the schemes to suit and benefit the workers (Cotton et al., 2005). While statutory welfare facilities are compulsory, non-statutory welfare schemes need to be shaped and driven by a very sound company policy that allows employees to have substantial input into what and how the facilities should be provided without conflicting or undermining the organization stance and focus.

The employer and employee need to work together to make sure that the facilities are provided based on mutual respects and understanding. Welfare provisions are desirable for employees but they cannot be substituted for wages. Workers have the inherent rights to living wages as a result of the labor they put into economic and productive aspects of an organization. However, it is pertinent to mention that living wages are not enough and cannot create a healthy work environment (Verdon, 2002). Wages are earned and usually used for social economics activities outside the workplace but welfare is provided for by the organization for a healthy and sustainable environment in the workplace (Portney, 2005). A combination of adequate wages with ample welfare provisions will intensely yield and achieve good results for the organization.

Statutory welfare facilities are products of the laws regulating the provision and implementation of welfare facilities in the workplace (Ridley & Channing, 2008). They are obligatory and imperative. Therefore, there are consequences for failure to provide welfare facilities as stipulated in the statutes. The health and safety of the workers are paramount and the necessary safety gadgets must be provided for the workers in addition to other important facilities and services. If not provided and there is a mishap or accident in the workplace, the victim may institute legal action against the erring organization in courts and punitive damages awarded against the organization if found wanting. Nowadays, an organization is not only considered successful as a result of the profits it has declared but also based on the welfare benefits given to employees that were used to make the profits (Schaltegger & Lüdeke-Freund, 2013). The organizational policy now contains numerous welfare facilities and how they are to be provided for the benefits of the employees. The company's annual reports and financial statements now reflect the amount of money being spent on various welfare schemes to the employees. Welfare schemes are now statutorily enforceable and the company has a corporate social responsibility to provide for them.

The successful adoption of employee welfare provisions depends on the approach which has been taken into account in providing such activities to the employees. Employee welfare is dependent on certain factors that influence the successful implementation of welfare programs.

1. Employee welfare measures cannot be a substitute for salaries and have a right to get adequate compensation.
2. A combination of social welfare, emotional welfare, and economic welfare together would achieve good quality results and make him lead a healthy work life.
3. Programs for housing, education, and training, provision of balanced diet and family planning measures are some of the important facets of welfare which increases the efficacy of the employees.

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4. The development of human personality should be the goal of organizations. Therefore, it is necessary to implement intramural and extramural employee welfare services both inside and outside the company.
5. Co-operation and agreement of employees in the formulation and adoption of welfare services are essential for their growth.
6. Employees develop a sense of pride when they are made to feel that welfare programs are designed and adapted for them.
7. The responsibility of welfare provisions should be shared by different groups such as employers, employees and also trade unions, to implement the welfare programs more effectively and healthily.
8. Assessment or evaluation of existing welfare provisions is necessary on a periodical basis so that one can judge and analyze the success of employee welfare programs.
9. Identify the employees' problems and find out the help required to solve the issues, and provide necessary resources in planning welfare programs. Timely action in the proper direction is essential in any kind of social work.
10. Finally, the fact that employee welfare must aim at helping the employee to motive them and increase efficiency in the long run.

Every effort should be made to give employees some voice in the choice of welfare activities so long as it does not amount to dictation from employees. This helps the employees to become more responsible and lead a healthy quality work life.

CONCLUSION AND MANAGERIAL IMPLICATIONS

The concept of employee welfare has been used by many organizations as a strategy of improving the efficiency of employees, especially in private companies since work-related problems can lead to poor quality of life for employees and a decline in performance. Welfare provisions are essential for the higher efficiency of the employees and their satisfaction. Without getting effective support of welfare provisions from the management, the employees may not be able to balance between work life and family life, as a result, it may lead to low productivity of the organization. The employees are satisfied with the welfare provisions adopted in the private sector organizations but are not effectively implemented. The management should take necessary steps to solve the problems in effectively adopting the welfare measures so that the employees can do their job more interestingly.

The objectives of the chapter have been achieved after going through the relevant analysis. It is encouraged to implement similar welfare provisions as it is useful in motivating the employees in increasing their work efficiency. The facets of employee welfare provisions especially education, retirement benefits, and other facilities are indicative of influencing the employees to work efficiently in private sector organizations. The companies need to take necessary efforts to find out the employees requirements and adopt those welfare provisions for the successful development of the organization. New schemes and facilities should be added to existing ones to improve the efficiency and quality of work life of the employees by the management of all organizations.

The importance of welfare schemes and services are increasingly being agitated for by employees and organized labor. Welfare measures are recognized by international labor organizations and they all enjoin each member state to the organization to ensure its proper implementation. Employees deserve

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more than only salaries or wages, hence the argument for the provision and improvement of existing welfare facilities in the workplace. The welfare provisions benefit employees as well as serves as an impetus for efficiency and effectiveness in the chain of productive activities in the workplace. The companies will, however, benefit more because efficiency and effective production will lead to huge output which would invariably impact on the profit and margins of the organization and make it a perpetually sustainable venture.

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KEY TERMS AND DEFINITIONS

Allowance: An allowance is an quantity of money given or fixed usually at regular intervals for a specific work or purpose.

Employee Relations: The term employee relations refers to the organization's efforts to manage relationships between employers and employees.

Employee Satisfaction: Employee satisfaction describes the employees happiness and fulfillment of their desires and needs at work.

Leadership: Leadership is the ability of an individual or a group of individuals to influence and guide followers or other members of an organization.

Motivation: Motivation is an important aspect that encourages employees to give their best performance and help in reaching organizational goals.

Welfare: Welfare is referred to the various services, benefits and facilities offered to the employees by the employers.

Work Environment: Work environment describes the surrounding conditions in which an employee works and operates.

Workforce Productivity: Workforce productivity is an assessment of the efficiency of an employee or a group of employees.

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Chapter 26
Welfare Programs as a Strategy of Promoting Employees' Economic Growth and Work Productivity

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ABSTRACT

Many organizations apply the notion of employee welfare programs as a strategy of improving employee productivity, since work-related exertions could lead to deprived quality of work life for employees and a decline in performance. Welfare schemes promote economic development by increasing the efficiency and productivity with the underlying principle being making workers bestow their loyal services ungrudgingly in genuine spirit of cooperation. The welfare schemes improve the organizational relations and also enhance the productivity of the employees. The main aim of implementing the welfare measures in any organization is to secure the labor force by providing proper working conditions and minimizing its hazardous effect on the life of the employees and their family members. The chapter articulates the various employee welfare programs put into practice by the industrial and service organizations and its influence on the employees' economic growth and productivity, in both public and private sectors.

INTRODUCTION

The concept of employee welfare deals with all activities that the employers are involved in which are directed towards providing employees with certain facilities and services in addition to salaries and wages (Tweddle, Battle, & Torjman, 2013). These welfare facilities are essential for the organisations growth as they have a close association with the employees' productivity. Employee welfare schemes increases the organizational productivity, promotes motivation, promotes healthy organizational relations, maintain organizational peace and reduces labour turnover. Welfare programmes serve as a means

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for employee motivation and increases not only the effectiveness of the workforce but also creativity in solving unique organizational challenges. This will eventually lead to attainment of higher levels of economic performance and high service delivery in an organization (Lagat, 2012).

In today's competitive economy, business organizations need to focus explicitly on providing the welfare facilities to the employees as it results in their satisfaction towards the organisation and it results in improved quality of work life (Patro, 2012). Employees are a valuable resource that may contribute in several different ways to an organization's activities if the organization gives them an appropriate chance. Welfare programme is a globally broad concept referring to a state of living of an individual or a group, in a desirable relationship with the total environment - ecological, economic and social. Employee welfare includes both social and economic content of welfare. Social welfare is primarily concerned with the solution of various problems of the weaker section of society like prevention of destitution and poverty. It aims at social development by such means as social legislation, social reforms, social service, social work or social action (Luthans and Sommer, 2005).

Employee welfare is considered one of the corporate commitments to demonstrate care for employees at all levels, underpinning their work and the environment in which it is performed (Srinivas, 2013). Employees are directly influenced by nature and quality of welfare services offered because they compare themselves with their counterparts in other organizations. Organizations should, therefore, bear in mind that for them to achieve their objectives, employee welfare services should be adequately competitive and focused towards solving real needs of employees. Most of the private organisations rarely provide overall competitive packages of employee welfare benefits, which results in low productivity, retention and may eventually lead to high rate of employee turnover (PWC, 2013).

Lack of such welfare benefits not only de-motivate employees, but also results in a high rate of employee turnover, low workplace productivity and affect the overall efficiency and performance of the non-academic staff in private universities (Ernst & Young, 2014).

The success of the employees' welfare programmes depends on the approach which the organization has considered. An organization should have a policy that guides provision of such welfare programmes to employees which include medical facilities, sanitary, accommodation of workers, amenities and industrial social security measures, training and education facilities, HIV and AIDS risk reduction and counselling (Harika, 2012).

Park (2015) argues that work environment should be comprised of issues such as working hours, employment policy, workers' health and welfare, workplace design and the general conduct of workers at the workplace. Employee welfare programmes in both developed and developing society have an impact not only on the workforce but also on the facets of human resources (Mishra & Bhagat, 2007). Welfare schemes should be implemented by all the organisations, whether public sector or private sector and industrial or service sector, as it raises the morale of employees, reduce the risk and insecurity, eliminates absenteeism, and improves the quality of living, which would go a long way in achieving the goals of an organisation. The very logic behind providing welfare schemes is to create efficient, healthy, loyal, and a satisfied labour force for the organization.

In the competitive environment, private sector organizations play a major role in the overall development of the national economy. Therefore, it is essential to focus on the welfare measures which enhance the employees quality of work life and also helpful in increasing the organizations productivity. Generally, in the public sector the funds are organized and provided either by central or state government. Therefore, they are able to provide the welfare measures effectively to their employees without any hesitation (Patro, 2015). In the private sector, large scale organizations can pool more funds and provide

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the welfare facilities as effectively as public sector organizations provide to their employees. But, small scale organizations may have limited funds, so they may not be able to take care of the welfare facilities effectively compared to the public sector. The chapter presents a comparison of the various welfare measures put into practice in both the industrial and service sector in contrast with public and private sector organisations. Furthermore, the chapter also highlights the areas that the management of these organizations needs to consider for improvement in welfare facilities in enhancing the productivity of employees.

BACKGROUND

The chapter provides an extensive background discussion in the area of implementation of employee welfare programmes to develop a thorough understanding of the conceptual constructs and empirical research. Wainaina (2014) studied the relationship between wellness programs and employee job satisfaction and found that the programs boosted employees' satisfaction levels. Maslach, Leiter, and Jackson (2012) stated that welfare schemes include some or all of the amenities provided in or near the organization and related to the working and living conditions. These facilities include canteens and nourishment facilities, transport arrangements, recreational services, housing schemes, education and training of employees, pension, bonus, medical facilities, childcare facilities, personal counselling, and so forth. Welfare schemes are a means to improve the productivity and efficiency of the employees. The employers are motivated to provide these facilities if it favourably affects their prosperity, profits and public image.

Binoy, Joseph, and Raju (2009) points out that the structure of a welfare state rests on its social security fabric. Government, employers, and trade unions have accomplished much to promote the betterment of workers' conditions. Kumar and Yadav (2002) study the satisfaction level from labour welfare schemes in sugar factories revealed the overall satisfaction level of workers from labour welfare schemes was low in both the private and state sugar factories. Furthermore, the workers in both sectors ranked the four labour welfare schemes such as housing scheme, medical scheme, followed by education and recreation schemes. Kuria (2012) studied on the effects of employee welfare programmes on job satisfaction of employees within the flower industry and established the effects of employee welfare programs on job satisfaction of employees in organizations within the flower industry.

Resma and Basavraju (2013) stated the employee welfare is a comprehensive term including various services, benefits and facilities offered to employees of the organization. Robinson, Sparrow, Clegg, and Birdi (2006) identified the key behaviours which were found to be associated with employee engagement. The behaviours included belief in the organisation, desire to work to make things better, understanding of the business context and the bigger picture, being respectful of and helpful to colleagues, willingness to go the extra mile, and keeping up to date with developments in the field. Satyanarayna and Reddi (2012) stated that the overall satisfaction levels of employees about welfare measures in the organization cover are satisfactory.

However, a few are not satisfied with welfare measures provided by the organization. The study suggested that existing welfare measures may be further improved. Such welfare measures enrich the employee standard of living and their satisfaction levels. Muruu, Were, and Abok (2016) demonstrated employee welfare schemes as those measures that aim at promoting physical, psychological and general well-being of the working class. The basic aim of welfare schemes in an industry is to improve the living

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and working conditions of the employee and their families because the employee's well-being cannot be achieved in isolation of the employee from his family. Patro and Raghunath (2016) found that the multiple facets of employee welfare facilities such as education facilities, medical facilities, retirement benefits and others facilities are indicative of the employees' efficiency in both public and private sector organizations. The management should concentrate on welfare facilities outside the work place also, so as to increase the quality of work life of the employees.

A welfare officer can be appointed to solve all the problems of the employees and maintain good relation between the employees and employer. Mishra and Bhagat (2007) found the police service provides essential service to the public in Kenya and thus their labour welfare activities need to be addressed just the same. Welfare services may be provided for matters concerning employees in terms of supplementing the income of the workers by providing services such as housing, medical assistance, canteens and recreation facilities. Indiatsy (2011) made a comparative analysis on the effects of social welfare facilities on employee motivation and found that the facilities provided by the organisation are a strong motivational element that has helped retain employees in the job for a long time and boosting their productivity.

According to Priti (2009), the role of welfare activities is to promote economic development by increasing efficiency and productivity with the underlying principle being making workers give their loyal services ungrudgingly in genuine spirit of co-operation and the general well-being of the employee. Manzini and Gwandure (2011) argued that the concept of employee welfare has been used by many organisations as a strategy of improving productivity of employees especially in the mobile industry since work related problems can lead to poor quality of life for employees and a decline in performance. It is argued that welfare services can be used to secure the labour force by providing proper human conditions of work and living through minimizing the hazardous effect on the life of the workers and their family members. Patro (2012) found that the employees are the assets of every organisation. The needs of the employee must be satisfied to meet the goals of the organisation. Any organisation would be effective only when there is high degree of co-operation between the employees and their management.

A research study in different organisations by Parul and Ashokkumar (2013) concluded in terms of proving that the different welfare provisions provided to the employees working in an organisation under the 1948 Factories Act have a positive relation with employee satisfaction after analyzing the correlation between these two factors. The reason behind this result is that these are the factors that lead to satisfaction and if these facilities are not present sometimes leads to dissatisfaction. Nanda and Panda (2013) stated the Rourkela Steel Plant has adopted a better kind of welfare activities which create an effective working environment and thus better productivity. There are different kinds of welfare schemes like medical allowance, death relief fund, insurance, housing, transportation, and recreation club facilities, etc., are provided by the company to the employees to maintain better industrial relations.

Patro (2016), in a comparative analysis of welfare measures in industrial and service organisations with reference to public and private sector found that an employees' welfare, is the key dimension to smooth employer-employee relationship. These welfare facilities improve the employees' morale and loyalty towards the management thereby increasing their happiness, satisfaction and performance.

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EMPLOYEE WELFARE PROGRAMMES

Implementing necessary employee welfare programmes have become a key factor for the overall growth and development of any organization. The organizations provide welfare measures to their employees to increase their efficiency and reduce absenteeism. Voluntary efforts for the welfare of the employees by the management may reduce the thought of government and others parties intervention in future. Organizations provide welfare facilities to their employees to keep their motivation levels high (Tiwari, 2011). The employees' welfare schemes can be classified into two categories viz., statutory and non-statutory welfare schemes. The statutory schemes are those schemes that are compulsory to provide by an organization as compliance to the laws governing employee health and safety. In India, these provisions are provided in Industrial Acts like Factories Act 1948, the Dock Workers Act (Safety, Health and Welfare) 1986 and the Mines Act 1962. The statutory welfare measures include the provisions such as, drinking water facilities, facilities for sitting, first aid appliances, latrines and urinals, canteen facilities, spittoons, proper lighting and ventilation, washing places, changing rooms, rest rooms, and so forth.

The non-statutory welfare measures differ from organization to organization and from industry to industry. The non-statutory welfare schemes may includes personal health care, flexi-time, employee assistance programs, grievances policy, maternity and adoption leaves, medi-claim insurance scheme, employee referral schemes, etc. These welfare measures are not obligatory to implement but these schemes may enhance the satisfaction level of the employees and augment the quality work life of the employees. The Factories Act 1948, as amended by the latest amendment in 1987, makes elaborate provisions in relation to health, safety, and welfare of employees, provisions regarding working hours including weekly hours, daily hours, weekly holidays, regarding employment of young persons, annual leaves with wages and provision regarding employment of women and young persons.

In this act, the provisions are also made in connection with first aid appliances along with a room are to be maintained in every organization. The Government has been empowered to make rules necessitating that in any organization wherein more than two hundred fifty workers are ordinarily employed, canteens, shelters, and restrooms shall be provided and maintained for the use of employees. Finally, the Act makes provision for the employment of Welfare Officer in manufacturing organizations and service oriented organizations also. Thus, it is clear that the Act makes very elaborate and unambiguous provisions regarding the minimum welfare standards to be followed by the management. But laying down the standards alone is not enough; it must also to be ensured that these provisions are implemented successfully, and non-implementation leads to dissatisfaction of the employees working in the organizations.

SIGNIFICANCE OF PROMOTING WELFARE ACTIVITIES

Employees are the primary assets of every organization, so employee needs must be satisfied to meet the goals of the organization. Any organization is effective only when there is a high degree of co-operation between the employees and their management. The welfare facilities go a long way stimulating interest in the employees to produce their full capacity and pay a good return to management in the long-term. Although it is a costly procedure for companies, it is nonetheless needed as it helps in the overall development of the employees (Patro, 2017). Employee welfare is very comprehensive and embraces a multitude of activities of employers, state, trade unions and other agencies to help workers and their families in the context of their industrial life. Employee welfare covers an ample field and connotes a state

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of well-being, happiness, satisfaction, protection and enlargement of human resources and also helps to motivation of worker. The fundamental propose of employee welfare is to enrich the life of employees and to remain them joyful and conducted that helps to development of organization (Choudhary, 2017).

There are certain reasons for which the employee welfare programmes are gaining greater importance in the development of the organizations and promoting employees' economic growth and productivity. In most of the organizations, even today the employees are not united into a class. Keeping in view the numbers, the employee union movement is still in its infancy. Even if the employee unions exist, there is a lack of enlightened leadership, and there is no unity between these unions themselves. In absence of properly organized employee union the workers can neither, place their demands effectively before the employer, nor can they think clearly and systematically of their own interests. Therefore, it is essential that the welfare of employees be efficiently looked after by the employers and the Government.

As the percentage of trained employees are very low, it is necessary to have training facilities for such a vast labour force. Healthy recreation is also at a priority and the efficiency of employees' are diminished by energy being employed in all kinds of undesirable channels. Hence, it is essential that recreation and enjoyment of a healthy kind be provided to the employees. In some organizations the employees are more restless and do tendentious towards frequent migration because life in the town does not provide for his needs, and the atmosphere in general does not suit. Additionally, due to an inadequate level of wages the employees cannot comfortably settle down in one place. This may, in turn, also give rise to absenteeism. This workers migratory tendency can be curbed by providing him with adequate facilities and conditions, and this also shows a positive effect over the absenteeism in the factory.

The welfare programmes motivate the employees and maintains efficiency and productivity. As welfare of worker at work place will improve not only their efficiency, but also improve their willingness to perform their work involving themselves with organizational goals. In India, many of the organizations are not using welfare concept properly at their workplace. The industrialists compel the employees to work in uncomfortable and adverse conditions. Their uncomfortable conditions lead to serious damages to workers. Therefore, promotion of employees welfare programmes is must in the identity premises.

BENEFITS OF EMPLOYEE WELFARE PROGRAMMES

Employee welfare includes the programmes that benefit the employees working in the organisation. Although it is a costly procedure for the companies, yet it is needed as it helps in the overall growth of the employees:

1. **High Competence:** The welfare programmes act as a morale booster for the employee. When the employees get an appreciation for what they do, it helps in increasing the work efficiency of the employees. When the work done is lauded by the management, it proves productive to both the organisation as well as the employees. If the work done by the employees is not appreciated, the output might not come as expected. Therefore, it is essential to practice employee welfare programmes in the organization;
2. **Morale Boost Up:** The employees work only when they are motivated to do the work. If the company wishes to get 100 percent output, then the company has to put in little efforts to encourage the employees. No one else would deliver the expected results. Therefore, in order to boost the morale of the employees, it is essential to offer employee welfare measures;

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3. **Build a Competitive Edge:** Competition is essential if the organisations want its employees to work well. In order to form a competitive environment at the work place, the company must provide employees with opportunities. The competitive edge in the work environment can only help in getting the required work from the employees. Therefore, if the healthy work environment or the healthy competition is required within the organization, it is vital to provide employees with welfare schemes;
4. **Obtain Well-timed Results:** If the companies want the employees to give the result on time or deliver the work in time, there needs to be some extra effort by the company, so as to encourage the employees to give timely work. This can be done only when the employees are encouraged apart from praising their work and are promoted with some welfare schemes. If the extra work is expected from the employees, they should also be given extra benefits, only then the timely results could be expected by the company;
5. **Improved Industrial Relations:** When the employees are satisfied with the welfare measures provided by the organisations it results in good industrial relations also. Not just the work output is good, but also the amiable relations are built by the employees when encouraged through various schemes. Therefore, various employee schemes are essential to make employees work in a better manner in the company;
6. **Better Mental and Moral Health:** The employees when given different facilities at work will improve the mental and moral health, as well as helps in becoming a good citizen. The growth of an employee is equivalent to the development of the organisation. Therefore, if the companies want to grow, they must help employees with their growth;
7. **Social Benefits:** The employees also get various social benefits which are also advantageous to the company. The social benefits increase the productivity, production as well as the work efficiency of the employees. The good quality work by the employees also helps in increasing the remuneration. Finally, this helps in increasing the standard of the employees which is appreciated and accepted by everyone, indeed;
8. **Helps in Overall Growth:** The welfare schemes are a motivating factor to the employees and helps in enhancing the overall growth and productivity of the employees. Both the common organizational goal and the personal goals are easily achieved by the employees, which benefits not just the company but also the members working in the organization;
9. **Retention of Employees:** The organisations train the employees to get better results. But, if the employees leave the company early, it affects not just the employees but also the company. So, the company has to get some schemes to retain the employees for a longer time period and that is only possible with the employee welfare programs. The employees would not even think of leaving the company, if they will get the required share of appreciation.

The benefits of employee welfare programmes are more direct to the employees than the company. However, it is important for the company to generate various employee welfare schemes.

DRAWBACKS OF EMPLOYEE WELFARE

As every coin has two sides, similarly the employee welfare also has its drawbacks. The schemes, however, help the employees more than the organisations. This is because whatever is the scheme bought

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by the company must be funded by the company itself. Therefore, this is the reason why the employee welfare schemes are a great disadvantage too. Some of the drawbacks of employee welfare are discussed:

1. **Welfare Schemes Become the Driving Force to Work:** Neither the money nor the schemes should be the driving force to work for the employees. The employees must be motivated through the work done by others. A competitive environment should be the driving force for the employees to work. Only then the expected work can be delivered by the employees;
2. **Financial Burden for the Company:** The company gets burdened financially as more the employees, more the budget will be required by the company to equally distribute the schemes among the employees working within an organization. Therefore, in order to equally distribute the schemes among the employees, it is essential for the company to have proper a financial budget in order to provide employees with the required schemes;
3. **Maintain a Competitive Edge in the Market:** To remain in the market and to keep oneself in the edge, it is essential to keep good employee welfare policy so as to attract maximum skilled employees within the organization. Every company needs skilled workers to work so that they get better output. In order to do the same, the company will have to have an edge over the welfare schemes too;
4. **Difficult to Keep Everyone Happy:** As in an organization the plans chosen are such that are benefited for majority of the employees but some or few employees will not be satisfied with the current chosen policy and with the amount they have to pay for their portion. The packages chosen by the organization are often not too delightful and are meant more for their personal benefit. Plans are often changed every year in different organizations and business which hinders the growth of employee in the company as the insurance plans get along on the annual basis gets affected;
5. **Legalization and Authentication Curse:** Often the benefits create concerns regarding legal complaints against both the employees and the organization on breaking certain policy intentionally or unintentionally. On breaking up of the specific policy and not paying the retention carries legal fees that need to be submitted to get out of trouble which at times becomes troublesome;
6. **It can Make People Dependent:** By allowing people to receive money while unemployed, it can encourage a feeling of dependence. This would create a number of less motivated workers who are used to receiving financial support without doing anything and develop the habit to prolong the process for as long as possible, which would cause their skills to deteriorate;
7. **Difficulty in Switching:** Switching often becomes very difficult to manage and company loses many employees if proper actions are not being taken. The major disadvantage associated with it is that the more the employees in the organization will be, the more the company need to pay to the insurance company to manage the account of different employees;
8. **Difficult to Maintain:** Additional department needs to be established in a company to properly manage the plans in the organization which will turn in hiring additional employees. Some health insurance packages also include help from a lawyer to make sure that the employees are covered and legal fees and other such expenses are added easily. Law suits are again a curse for the organization. Law suits are sometimes extremely expensive and take great amount of time to keep it away from any business. Even if the suit makes it to the court, it can be very expensive to pay the legal feel and pay off the fines for its settlement.

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Though welfare programs cannot sustain to help people in the long- term, they are still very crucial in lending assistance to those who really need it. However, there are also definite disadvantages to them. Welfare would still be viable to continue as long as it serves its functions.

WELFARE SCHEMES IN FIVE YEAR PLANS

Employee welfare schemes have gained much importance in the 5-year plans.

In the First Five Year Plan (1951-1956), the Government took considerable effort for the welfare measures of the labour classes of society. During this period, important Acts such as the Plantations Labour Act of 1951, the Employees Provident Fund Act of 1952, and the Mines Act of 1952 were implemented. A subsidy was provided for housing scheme for worker was documented and implemented in 1952. Various state governments also formulated and implemented certain Acts as legislation on housing for labour class (i.e., the Bombay Housing Board Act of 1948, the Madhya Pradesh Board Act of 1950, the Hyderabad Labour Housing Act of 1952, etc).

The Second Five Year Plan (1956–1961) provided impetus for further welfare measures and legislation for labour. New laws were also established to ensure welfare measure for merchant seamen and motor transport workers. The employee's state insurance scheme, 1948 was implemented and to cover more employees in the factories. A comprehensive scheme of Dock workers (safety, health and welfare) scheme was formulated in 1961. In 1959, the state government of Assam passed an act labour working in tea plant known as the Assam Tea Plantation Labour Employee's Welfare Fund Act. In 1956, a New Plantation Labour Housing Scheme was enacted which has provision of a certain amount of loan to be provided for construction of houses for labours. The second five year plan period also witnessed quite a large number of enactments in accommodation and housing by various state governments as labour welfare measures.

The Third Five Year Plan (1961-66) emphasized the requirement of more efficient and effective implementation of various statutory labour welfare provisions and legislation. The plan also talked about establishment of co-operative credit organisations and consumer's stores for industrial workers, and stressed on the role of trade unions and voluntary organizations in managing such co-operatives organisations. There has been enactment of the legislative provisions during this plan period which include the Apprentices Act, 1961; Iron-Ore Mines Labour Welfare Cess Act, 1961; Maternity Benefit Act, 1961 And Payment of Bonus Act, 1965. During this period, co-operative housing organisation also started to make amends gradually.

The Fourth Five Year Plan (1969–1974) was more about the expansion and implementation of the Employees' State Insurance (ESI) Act to provide health related facilities to the families of insured worker as well as labourers working in shops and commercial establishments. To protect the contract labour from exploitation government passed, the Contract Labour Regulation and Abolition Act of 1970. Provision of this Act compels contractors to undertake welfare activities for of contractual workers. In 1972, the Government enacted an important statute as the Payment of Gratuity Act, 1972 (bonuses) for the welfare of retiring industrial employees.

The Fifth Five Year Plan (1974–1979) witnessed the additional provisions for labour welfare in a number of areas. For encouraging the provision of industrial safety, safety cells were established in various states of the country. This 5-year plan period also covered: (1) new additional requirements for the most of the existing training institutions, such as the Central Training Institutes for Instructors, the Foreman

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Training Institute, and Central Staff Training and Research Institute; (2) strengthening and expansion of the Advanced Training Institute throughout the country; (3) Extension of the Apprenticeship Training Programme; (4) Development and establishment of Vocational Training in Women's Occupations; and (5) all other kinds of schemes related to research, surveys and studies to be undertaken by various organisations and institutes.

The Sixth Five Year Plan (1980–1985) was more about effective implementation of the welfare measures of prior legislative enactments, and extension of coverage of Act such as the Employees Provident Fund, Employees' State Insurance Scheme and the Family Pension Scheme. Special scheme also were developed and implemented by State Governments for the welfare of agricultural labour, artisans (skilled craftsmen), leather workers, fishermen, handloom weavers and other unorganised sector workers.

The Seventh Five Year Plan (1985–1989) focussed on enhancement in working conditions of informal sector worker both in the rural areas and also in the urban areas. This plan period witnessed certain major initiative for working women. Thus during this period the stress was on improvement in capacity development, efficiency and productivity.

The Eighth Five Year Plan (1992–1997) witnessed government stressing on the importance of reforms in industrial and trade policies. This five year plan put great emphasis on resource mobilisation from public enterprises. In this period, the great work had been on the aspect of enhancement for the quality of labour work, productivity, skills development, working conditions, provisions for welfare measures and the social security, especially to those working in the unorganised sectors without any socioeconomic security.

The Ninth Five Year Plan (1997–2002) emphasized the enhancement of labour welfare measures, increasing productivity through skills development, and also the adequate provisions were taken for social security of workers. Governmental institutions and resources were directed towards skill development, knowledge sharing on new job opportunities, monitoring and evaluation of working conditions for labour class, creation of industrial harmony through development of infrastructure for better industrial relations, and insurance policy for labour against illness, injury and unemployment and their families.

The Tenth Five Year Plan (2002–2007) given more weight on improving the working conditions, better industrial relations, proper enforcement of Labour Legislations and welfare measures, and also launching various schemes for the welfare activities for all industrial workers and their families. The Labour Department (GoI) worked on implementation mechanism of about two dozen of labour statutes. Their goal was not only in terms of economic benefits (such as minimum wages, overtime, bonuses, etc.) to workers, but also to provide them adequate health and safety facility at the workplace.

The Eleventh Five Year Plan (2007–2012) talked about unemployment and underemployment issue, the promotion and generation of regular wage employment opportunities and addressing the continuing problems of workers employed in unorganised sector all over the country.

The Twelfth Five Year Plan (2012–2017) is more about skill building as an instrument to improve the effectiveness and contribution of labour to the overall production. It has also made skill development as an important agenda for the Governments at Centre as well as States. In this regard, various challenges on skill development identified. Enactments and scheme such as Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), Swarnjayanti Gram Swarozgar Yojana (SGSY) and National Rural Livelihood Mission (NRLM) to restructure and strengthened the various employment promotion schemes for the bottom of the pyramid. For enhancing living conditions of the workers and to accomplish higher productivity with higher efficiency, skill development through training is most importance.

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Manpower development through skill development will provide adequate manpower of appropriate skills and quality to various sectors is fundamental for express socioeconomic development of country and its people.

OBJECTIVES OF THE CHAPTER

The main objectives of the chapter are:

1. To identify the various welfare programmes put into practice in the industrial and service sectors of both public and private sector organizations;
2. To compare the satisfaction level of employees' on the welfare programmes and also analyzes its influence on their growth and productivity;
3. To suggest measures for improving the overall welfare amenities in both the industrial and service sector organizations.

METHODOLOGY

The present chapter is an enquiry into the employee welfare programmes put into practice by different industrial and service sector organisations with reference to both the public and private sector in the Visakhapatnam city, and the satisfaction level achieved by the employees working in these organisations. The presented data are collected from both the primary and secondary sources. The secondary data was collected from various published sources such as, books, news paper publications, journals, company magazines, official websites of various industrial and service sector organisations, and some other sites are also searched to collect the relevant data.

The primary data was collected from the respondents by distributing questionnaires, through personal interviews, and direct personal observation. The information was collected from the employees who are working in different public and private sector organisations such as industrial organisations (manufacturing, automobile, and others) and service organisations (educational institutions, health centres, software companies, administrative, and financial institutions), individually and taken their views and suggestions. The questionnaire was distributed to 400 employees' personally to know their views regarding the satisfaction level on the execution of welfare schemes from different organizations.

For the purpose, a total of 160 valid and completed questionnaires are selected from various organizations out of which 80 respondents are from Industrial organisations and 80 respondents from Service organisations (both include 40 employees each from Private sector and Public sector). The collected data is used to compare the opinion regarding the satisfaction of the employees on the provision of welfare measures.

To analyze the responses of the employees on implementation of the welfare schemes, a 5-point rating scale technique is used. The scale ranges from Excellent (5), Good (4), Satisfactory (3), Poor (2), and Not In-force (1). The statistical technique mean and standard deviation is used for analyzing the collected data and tabulated wherever necessary, so as to draw inferences based on findings, suggestions and conclusions on employee welfare schemes.

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RELATIVE STATISTICAL ANALYSIS

The employees of different industrial organisations and service organizations related to both public and private sector were enquired whether they are satisfied with the various welfare schemes put into practice in their organizations. Based on the questionnaire survey, a relative analysis and interpretation is made on various welfare schemes implemented in these organisations. For the purpose of both, statutory and non-statutory welfare measures are considered. Six important statutory welfare measures are identified, such as canteen and store facilities, medical and health benefits, drinking water and sanitary facilities, restroom and locker facility, workmen compensation, and safety measures. And eight non-statutory welfare schemes such as housing and quarter facilities, educational benefits, transport allowances or facilities, retirement benefits, recreational facilities, grievance settlement forums, retention polities, and other allowances and facilities are identified for collecting the opinion of the employees along with their suggestions. The results and findings regarding the employee welfare programmes that influence the employee's productivity are discussed in the chapter.

The relative analysis of statutory and non-statutory employee welfare measures implemented in industrial organisations with reference to both public and private sector organisations are shown in Table 1.

Table 1. Comparison of welfare programmes in industrial organisations

Factor Perception	Public Sector		Private Sector		Total	
	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation
Statutory Welfare Programmes						
Canteen & Store Facilities	3.48	0.954	3.70	0.848	3.59	0.907
Medical and Health Schemes	3.98	0.763	2.95	1.078	3.46	1.063
Drinking Water & Sanitary Facilities	4.08	0.652	4.00	0.712	4.04	0.681
Rest Room & Locker Facility	3.73	0.871	3.30	0.848	3.51	0.883
Workmen Compensation	3.63	0.973	2.68	1.088	3.15	1.134
Safety Measures	3.75	0.864	3.45	0.870	3.60	0.877
Non-Statutory Welfare Programmes						
Housing/Quarter Facilities	3.80	0.933	1.80	0.906	2.80	1.359
Educational Benefits	3.88	0.753	2.55	1.231	3.21	1.215
Transport Allowances/ Facilities	3.50	0.981	3.38	0.946	3.44	0.963
Retirement Benefits	4.18	0.632	1.78	0.993	2.98	1.462
Recreational Facilities	2.83	1.188	2.03	0.993	2.43	1.163
Grievance Settlement Forums	2.90	1.026	2.75	0.974	2.83	1.000
Retention Policies	3.85	0.828	2.90	1.074	3.38	1.068
Other Allowances /Facilities	3.58	0.952	2.43	1.003	3.00	1.133

Source: Primary Data

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It is observed that almost all the statutory welfare programmes are implemented in both the public and private sector. The respondents are more satisfied with the provision of 'drinking water and sanitary facilities (μ=4.04)' followed by 'safety measures (μ=3.60)' and 'canteen facilities (μ=3.59)'. The respondents are less satisfied with 'workmen compensation (μ=3.15)' facility provided by the organisations. In the case of both public and private sectors, the statutory welfare measure 'drinking water and sanitary facilities' scored highest mean value of 4.08 and 4.00 respectively. In the public sector, the respondents are satisfied with all the statutory welfare programmes put into practice in their organisations. In the private sector, the respondents are having low satisfaction regarding 'workmen compensation (μ=2.68)' and 'medical and health schemes (μ=2.95)'.

Regarding the non-statutory welfare programmes in the public sector almost all employees' responded positively, whereas in the private sector many of them responded that these facilities are satisfactory in their organisations. The highly satisfied welfare scheme is 'transport allowances/facilities' with mean value of 3.44 followed by 'retention policies (μ=3.38)' and 'educational benefits (μ=3.21)'. The low significant factor is provision of recreational facilities (μ=2.43). In public sector, 'retirement benefits' scored highest mean value of 4.18 and the lowest is 'provision of recreational facilities' with a mean of 2.83. In the case of private sector, the most satisfied welfare measure is 'transport allowances/facilities' with mean value of 3.38.

The respondents are less satisfied with the provision of 'retirement benefits (μ=1.78)' and 'housing/quarter facilities (μ=1.80)'. Thus, it can be concluded that the public sector employees are more satisfied when compared to the private sector employees. The management's of private sector need to put much effort to implement better welfare schemes to their employees as it enhances the work productivity. The public sector can also focus on the better implementation of the non-statutory welfare programmes in their organisations.

The relative analysis of statutory and non-statutory employee welfare measures implemented in service organisations with reference to both public and private sector organisations are shown in Table 2.

In service organisations, it is observed that almost all the statutory welfare programmes are implemented in both public and private sectors and the respondents are also satisfied with these facilities. The respondents are highly satisfied with the provision of 'drinking water and sanitary facilities (μ=3.79)' followed with 'canteen facilities (μ=3.59)' and 'safety measures (μ=3.51)'. The respondents are less satisfied with 'workmen compensation (μ=3.25)' provided by the organisations. In the case of public sector, the respondents are satisfied with all the statutory welfare programmes put into practice in their organisations. The highly significant factor is 'medical and health schemes' with a mean value of 3.88 and the lowest satisfied factor is 'safety measures (μ=3.65)'.

In the private sector, the respondents are having less satisfaction compared to public sector. The respondents are highly satisfied with the statutory measure 'drinking water and sanitary facilities (μ=3.78)' and low satisfaction regarding 'workmen compensation (μ=2.80)'. The non-statutory welfare programmes are fully implemented in the public sector and in case of private sector these schemes are not fully operational. The highly significant welfare measure is 'transport allowances/facilities' with mean value of 3.60 followed by 'retention policies (μ=3.20)' and 'educational benefits (μ=3.05)'. The low significant factor is recreational facilities (μ=2.40). In public sector, 'retirement benefits' scored highest mean value of 4.10 followed with 'housing/quarter facilities (μ=3.80)' and 'transport allowances/facilities (μ=3.73)'.

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Table 2. Comparison of welfare programmes in service organisations

Factor Perception	Public Sector		Private Sector		Total	
	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation
Statutory Welfare Programmes						
Canteen & Store Facilities	3.53	0.871	3.65	0.858	3.59	0.864
Medical and Health Schemes	3.88	0.682	3.13	1.036	3.50	0.952
Drinking Water & Sanitary Facilities	3.80	0.753	3.78	0.826	3.79	0.788
Rest Room & Locker Facility	3.68	0.938	3.13	0.905	3.40	0.960
Workmen Compensation	3.70	0.719	2.80	1.216	3.25	1.093
Safety Measures	3.65	0.828	3.38	0.919	3.51	0.883
Non-Statutory Welfare Programmes						
Housing/Quarter Facilities	3.80	0.786	1.85	0.969	2.83	1.315
Educational Benefits	3.60	0.922	2.50	1.102	3.05	1.154
Transport Allowances/ Facilities	3.73	0.927	3.48	1.006	3.60	0.973
Retirement Benefits	4.10	0.668	1.90	0.739	3.00	1.308
Recreational Facilities	2.60	1.327	2.20	1.174	2.40	1.265
Grievance Settlement Forums	3.10	1.051	2.68	1.111	2.89	1.099
Retention Policies	3.70	0.933	2.70	1.036	3.20	1.103
Other Allowances/ Facilities	3.43	1.003	2.35	0.969	2.89	1.121

Source: Primary Data

The lowest satisfied welfare measure is 'recreational facilities' with a mean of 2.60. In the case of private sector, the most satisfied welfare measure is 'transport allowances/facilities' with mean value of 3.48. The respondents are less satisfied with the facilities of 'housing/quarter facilities (μ=1.85)' and 'retirement benefits (μ=1.90)'. Thus, from the comparative analysis it can be concluded that the private sector employees are not much influenced when compared with the public sector employees. The management's need to improve these welfare programmes, as it helps in increasing the productivity of the employees. A comparison on satisfaction level of the employees on the implementation of the statutory and non-statutory welfare programmes in both the industrial and service organisations is shown in Table 3.

The employees of both industrial and service organisations are almost satisfied with the statutory welfare programmes put into practice in their organisations. It can be observed that the respondents are more satisfied with the 'drinking water and sanitary facilities (μ=3.91)' followed by 'canteen and store facilities (μ=3.59)' and 'safety measures (μ=3.56)'. The respondents are less satisfied with the 'workmen compensation (μ=3.20)' provided by the organisations. In both the industrial and service sectors, the respondents are highly satisfied with the 'drinking water and sanitary facilities (μ=3.79 and 4.04 respectively)' provided by their organisations. The low satisfied factor is 'workmen compensation' with the mean values of 3.25 and 3.15, respectively.

Regarding the implementation of non-statutory welfare programmes, both the industrial and service sector employees are not much satisfied. Many employees responded that these schemes are not implemented in their organisations. The highly significant welfare measure is 'transport allowances/facilities' with mean value of 3.52 followed by 'retention policies (μ=3.29)' and 'educational benefits (μ=3.13)'.

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The low significant factor is recreational facilities (μ=2.41). In the case of both industrial and service sector organisations, 'transport allowances/facilities' scored highest mean value of 3.60 and 3.44, followed by 'retention policies (μ=3.20; 3.38)' and 'educational benefits (μ=3.05; 3.21)'. The lowest satisfied welfare measure is 'recreational facilities' with a mean of 2.40 and 2.43 respectively.

Table 3. Comparison of welfare programmes in industrial and service organisations

Factor Perception	Industrial Organizations		Service Organizations		Total	
	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation
Statutory Welfare Programmes						
Canteen & Store Facilities	3.59	0.864	3.59	0.907	3.59	0.884
Medical and Health Schemes	3.50	0.952	3.46	1.063	3.48	1.008
Drinking Water & Sanitary Facilities	3.79	0.788	4.04	0.681	3.91	0.746
Rest Room & Locker Facility	3.40	0.960	3.51	0.883	3.46	0.922
Workmen Compensation	3.25	1.093	3.15	1.134	3.20	1.113
Safety Measures	3.51	0.883	3.60	0.877	3.56	0.880
Non-Statutory Welfare Programmes						
Housing/Quarter Facilities	2.83	1.315	2.80	1.359	2.81	1.335
Educational Benefits	3.05	1.154	3.21	1.215	3.13	1.186
Transport Allowances/ Facilities	3.60	0.973	3.44	0.963	3.52	0.970
Retirement Benefits	3.00	1.308	2.98	1.462	2.99	1.385
Recreational Facilities	2.40	1.265	2.43	1.163	2.41	1.213
Grievance Settlement Forums	2.89	1.099	2.83	1.000	2.86	1.050
Retention Policies	3.20	1.103	3.38	1.068	3.29	1.088
Other Allowances/ Facilities	2.89	1.121	3.00	1.133	2.94	1.127

Source: Primary Data

Thus, from the comparative analysis it can be concluded that the service sector employees are much satisfied than the employees' industrial organisations. However, the managements of both the industrial and service sectors need to further improve the non-statutory welfare programmes for enhancing the workers economic growth and work productivity. A comparison on the satisfaction of the employees with the implementation of the statutory and non-statutory welfare programmes in both the public and private sector organisations is shown in Table 4.

The analysis shows that almost all the respondents are satisfied with the statutory welfare programmes practiced in both the public and private sector organisations, whereas they are less satisfied with the non-statutory welfare programmes. With regards to the statutory welfare measures, it can be observed that the respondents are more satisfied with the 'drinking water and sanitary facilities (μ=3.91)' followed by 'canteen and store facilities (μ=3.59)' and 'safety measures (μ=3.56)'. The respondents are less satisfied with the 'workmen compensation (μ=3.20)' provided by the organisations. In both the public and private sectors, the respondents are highly satisfied with the 'drinking water and sanitary facilities (μ=3.94 and 3.89 respectively)' provided by their organisations.

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Table 4. Comparison of welfare programmes in public and private sector

Factor Perception	Public Sector		Private Sector		Total	
	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation
Statutory Welfare Programmes						
Canteen & Store Facilities	3.50	0.911	3.68	0.851	3.59	0.884
Medical and Health Schemes	3.93	0.723	3.04	1.057	3.48	1.008
Drinking Water & Sanitary Facilities	3.94	0.715	3.89	0.777	3.91	0.746
Rest Room & Locker Facility	3.70	0.903	3.21	0.879	3.46	0.922
Workmen Compensation	3.66	0.853	2.74	1.152	3.20	1.113
Safety Measures	3.70	0.845	3.41	0.893	3.56	0.880
Non-Statutory Welfare Programmes						
Housing/Quarter Facilities	3.80	0.860	1.83	0.935	2.81	1.335
Educational Benefits	3.74	0.850	2.53	1.165	3.13	1.186
Transport Allowances/ Facilities	3.61	0.958	3.43	0.975	3.52	0.970
Retirement Benefits	4.14	0.649	1.84	0.875	2.99	1.385
Recreational Facilities	2.71	1.261	2.11	1.087	2.41	1.213
Grievance Settlement Forums	3.00	1.040	2.71	1.042	2.86	1.050
Retention Policies	3.78	0.883	2.80	1.057	3.29	1.088
Other Allowances/ Facilities	3.50	0.978	2.39	0.984	2.94	1.127

Source: Primary Data

The low satisfied factor is 'canteen & store facilities' with a mean of 3.50 in the case of public sector and 'workmen compensation' with the mean values of 2.74 in the case of private sector. The satisfaction of respondents with regard to the implementation of non-statutory welfare programmes in both the public and private sector reveals that they are not much satisfied. Many employees retort that these schemes are not implemented in their organisations. The highly significant welfare measure is 'transport allowances/ facilities' with mean value of 3.52 followed by 'retention policies (μ=3.29)' and 'educational benefits (μ=3.13)'. The low significant factor is recreational facilities (μ=2.41). In the case of both public organisations, 'transport allowances/facilities' scored highest mean value of 4.14, followed by 'educational benefits (μ=3.80)' and 'retention policies (μ=3.78)'.

The lowest satisfied welfare measure is 'recreational facilities' with a mean of 2.71. With regard to private organisations, 'transport allowances/facilities' got highest rating of 3.43, followed by 'retention policies (μ=2.80)' and 'grievance settlement forums (μ=2.71)'. Thus, from the comparative analysis it can be concluded that the public sector employees are much satisfied than the employees' of private sector. However, the management of private sector organisations need to further improve the non-statutory welfare programmes for enhancing the workers economic growth and work productivity.

Consequently, the relative analysis clearly states that in the case of industrial organisations or service organisations, both the public sector and private sector employees are equally satisfied with implementation of the welfare programmes in their organisations. The managements' of these organisations need to put much effort to improve the welfare schemes put into practice in their organisations as it enhances

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the employees' economic growth and work productivity, also increases the overall efficiency of the organisations.

MEASURES TO ENHANCE WELFARE PROGRAMMES

The organisations should make pragmatic efforts to enhance the employees' work life and job satisfaction to increase their overall economic growth and work performance. Based on the comparative analysis and suggestions given by various respondents of industrial and service sector, certain measures can be enacted for further improvement in practicing of welfare programmes in the organisations that could be extremely useful for the management of both the public and private sector organisations to increase the organisational efficiency:

1. The management should update the employees about the different welfare schemes adopted in their organizations and suggest them how to make use of these facilities;
2. The employers need to concentrate on the facilities provided to the employee's outside the work place like quarters, medical benefits, etc., which helps in having better quality of work life;
3. The private sector whether industrial or service organizations need to improve the welfare schemes implemented in their organizations;
4. Proper incentives, allowances, promotions, etc., should be worked out that will fulfill the ambitions and aspirations, which will go a long way in elevating their level of job satisfaction;
5. The management should conduct stress reducing events like yoga and meditation for the employees;
6. The employers of private sector organizations need to identify the needs of their employees and provide necessary welfare schemes that will influence them in getting job satisfaction;
7. Improvements should be initiated in the field of grievance handling, rest room facilities, service awards, and other motivating facilities in both the sectors;
8. Necessary steps must be initiated to conduct job training programmes, seminars and workshops to update and enhance the knowledge of the employees;
9. A welfare officer can be appointed to solve all the problems of the employees and maintain good relation between the employees and employer;
10. The private sector organizations must take initiative to provide retirement benefits for their employees;
11. The private sector organizations must try to initiate necessary steps to provide subsidized canteen and store facilities to their employees;
12. The public and private sector organizations have to provide separate restrooms for both male and female employees;
13. Both the public and private sector organizations must set up a reading room or library for employees to make use of their leisure time and enhance their knowledge;
14. The management can think of formulation of a problem solving committee including the employees and administration, for the better solution of the welfare problems of the employees;
15. The organizations can appoint a welfare officer to solve all the problems of the employees and maintain good relationship between the employee, employer and other departments.

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The welfare programmes should be properly implemented by the industrial and service organizations of both private and public sectors. These measures would make an immense contribution towards increasing the welfare, well-being and job satisfaction of employees working in these organisations.

FUTURE RESEARCH DIRECTIONS

Organizations should take necessary steps to solve the welfare problems of the employees and take certain measures, so that the employee can perform more effectively. New schemes and facilities should be added to existing ones to improve the efficiency and quality of work life of the employees by the management of all organizations. This chapter is expected to help other researchers to consider various welfare programmes that influence the employee's performance and overall organizational productivity. Furthermore, research with regards to other industrial and service sector organizations can be considered as provision of welfare schemes has become important in every type of organization.

CONCLUSION

Welfare facilities play an important role in managing the Human Resources in any organisation. The organizations whether private or public sector and industrial or service organisations need to practice the welfare programmes for better employee productivity and organisational development. A satisfied employee is the key element, who acts as the organization's ladder for success. Welfare helps in keeping the morale and motivation of the employees high, so as to retain the employees for longer duration. The thought of employee welfare has been used by many organizations as a strategy of improving the employee's productivity, especially in the private sector, since work related problems can lead to poor quality of life for employees and decline in employees work performance. The welfare programmes improve the employees' morale and loyalty towards the management thereby increasing their happiness, satisfaction and also their productivity.

The relative analysis states that the overall satisfaction of employees on both statutory and non-statutory welfare schemes in the industrial organisations with regard to public sector is good and in private sector is satisfactory. However, in service organisations, the private sector employees are not satisfied with implementation of welfare schemes in their organizations when compared with the public sector employees, who are more than satisfied with these welfare programmes. Therefore, it is suggested that the existing welfare programmes may be improved further as they enrich the employee's standard of living and their satisfaction levels. The private sector organisations has to take necessary efforts to find out what the employees want and practice those welfare schemes for the successful growth development of the organization. An employee welfare facility is the key dimension to smooth employer-employee relationship. The organisations need to take necessary steps to solve these problems and overcome the challenges, so that the employees can do their work more effectively.

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KEY TERMS AND DEFINITIONS

Employee Productivity: It is an assessment of the efficiency of an employee or a group of employees.

Industrial Sector: The industrial sector (secondary sector) of the economy is one that makes finished products which can then be utilized viz. construction and manufacturing industry. This sector includes companies involved with aerospace and defense, industrial machinery, tools, lumber production, construction, waste management, manufactured housing, cement and metal fabrication.

Labor Welfare: It includes overall welfare facilities designed to take care of wellbeing of employees and in order to increase their living standard.

Mutual Welfare: Mutual welfare is a corporate enterprise undertaken by the workers themselves or their organizations called trade unions.

Private Sector: The private sector is the part of a country's economic system that is run by individuals and companies, rather than the government. It usually comprises of organizations run by individuals and groups who seek to generate and return a profit back to its owners.

Public Sector: The public sector is that portion of an economic system that is controlled by national, state or provincial, and local governments. It usually comprises of organizations that are owned and operated by the government and exist to provide services for its citizens.

Service Sector: The part of a country's economy that is made up of businesses that provide services. It includes the companies, organizations, and activities in an economy that provide services such as banking, transport, tourism, etc. rather than manufacturing goods.

Statutory Welfare: The statutory schemes are those schemes that are compulsory to provide by an organization as compliance to the laws governing employee health and safety.

Voluntary Welfare: Voluntary welfare includes all those activities which employers undertake for their employees on voluntary basis. These differ from organization to organization and from industry to industry.

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Chapter 27
Factors Affecting Employees' Job Satisfaction and Psychological Health

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ABSTRACT

The aim of this study was to examine the level of psychological health and job satisfaction and to find out which predictors have an impact on nurses' psychological health and job satisfaction. Six hundred forty nurses from surgery and internal medicine departments from Slovenian hospitals participated in the research. Data analysis was carried out by using SPSS 25.0. With transformational leadership style, leaders' characteristics, leaders' emotional intelligence, leaders' communication skills, positive effectivity, and job satisfaction, one can explain 57% of nurses' psychological health. The results indicated that 85% of nurses had good psychological health. And also that more frequent exposure to stress and lack of stress management were associated with poor psychological health. The employees' psychological health does not affect only the individual, but also on the quality of care and on the effectiveness of hospitals. It is important to monitor employees' job satisfaction and take care for employees' health by providing a healthy work environment.

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INTRODUCTION

Hospitals play an important role in the health care system. They are health care institutions that have an organized medical and other professional staff, and deliver medical, nursing and related services 24 hours per day, 7 days per week. Hospitals offer a varying range of acute, convalescent and terminal care using diagnostic and curative services in response to acute and chronic conditions, arising from diseases as well as injuries and genetic anomalies (WHO, 2016a).

It is well known that the health-care system in all European and others industrial countries across the world face with a serious shortage of nurses (Boamah & Laschinger, 2016) and that it is facing rapidly increasing needs for patient care in an aging population (Kovner et al., 2016; Leineweber et al., 2016). This situation has made the nursing profession more stressful and susceptible to turnover (Chiang & Chang, 2012) This situation is worsening because of the aging of the working population and the decreasing rates of nurses entering the labor market (Shultz & Adams, 2007). WHO (2010) identified that 57 countries to be in a crisis relative to their health care work force. In the coming decades, the redistribution of the population toward older adults will reduce the relative size of the working population to the non-working older adult population, and also increase the need for workers to provide healthcare services to the ageing population (Hirst, 2019). Demands of nurses at work are high, work conditions change rapidly, and nurses are supposed to ensure high standards of quality (Collin, Paloniemi & Mecklin, 2010) and to effectively handle complex situations (Shin & Kim, 2013). Obviously, there are inherent tensions in nursing, such as time pressure, staff shortages, and increasing demands for high performance (Gartmeier, Gruber & Heid, 2010). The nursing shortage presents challenges for policy makers at all levels of government in countries all over the world. Hirst (2019) noted some of the factors driving the nursing shortage, like inadequate human resources planning and management, the ageing nursing workforce, internal and external migration, and high attrition which are the consequence of poor work environments, low professional satisfaction, low social status, and inadequate salary.

The importance of effective leadership in health care was exposed many times (Giltinane, 2013; Grimm, 2010; Nelsey & Brownie, 2012). Leadership in nursing is pivotal because nurses represent the most extensive discipline in health care, they are also the main working group in hospitals and play a vital role in the caring system of every country (Marquis & Huston, 2009; Sullivan & Garland, 2010; WHO, 2013). The nurses' job assignment as health team members is very important, they must to preserve and promote the quality of care to a standard level (Mohammmadi et al., 2011), but there is a problem because the average age of nurses in developed countries increasing (WHO, 2013). Nursing is a profession that involves interaction with different people (patients, their families, other nurses, doctors and various specialists), emotional and physical work in a very challenging environment (Purcell, Kutash, & Cobb, 2011; Scheick, 2011). According to the progress and development, working conditions are constantly changing, including strategies for increasing productivity and reducing costs and maintaining quality of care (Aiken, Clarke, Sloane, Sochalski, & Silber, 2002). Nursing is an emotional and physical strenuous job, and studies show that work in health care poses a major risk for the occurrence of stress, anxiety and depression (Gershon et al., 2007). Burnout is associated with psychological disorders, physical illness, decrease work productivity and an increase work absence (Ahola et al., 2008). Chronic work stress and burnout in nursing are related to consequences for psychological and physical symptoms (Melamed, Shirom, Toker, Berliner, & Shapira, 2006; Salvagioni et al., 2017). The field of work, as well as age, education (Gómez-Urquiza, Vargas, De la Fuente, Fernandez-Castillo,. &Canadas-De la Fuente, 2017;

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Hatch et al., 2018) gender, marital status and children (Canadas-de la Fuente et al., 2018) play an important role of nurses' burnout.

BACKGROUND

Psychological Health

Psychological health is an integral and essential part of health. Some people say psychological health as "mental health" or "emotional health" or "prosperity", but is just as important as good physical health (Mental Health Foundation, 2016). The WHO (2016b) states: "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity." An important implication of this definition is that mental health is more than just the absence of mental disorder or disability. Mental or psychological health is a state of well being in which the individual realizes his own abilities, can cope with the normal stresses of life, can work productively and is able to contribute to the community. Psychological health is the successful performance of mental function, resulting in activities, fulfilling relationships with other people, and providing the ability to adapt to change and cope with adversity (National Alliance of Mental Illness, 2011). Multiple social, psychological, and biological factors determine the level of psychological health of a person at any point of time. Poor psychological health associated with rapid social change, stressful work conditions, discrimination, social exclusion, unhealthy lifestyle, risks of violence, physical ill-health and human rights violations (WHO, 2016b).

Psychological health is a significant element of social needs (Zandi, Sayari, Ebadi, & Sanaisanasab, 2011). Good psychological health is a sense of well-being, confidence and self-esteem. Good psychological health enables us, to fully enjoy and appreciate other people day-to-day life in our environment. When we are psychological healthy, we can form positive relationships, use our abilities to reach potential and deal with our life's challenges (Mental Health Commission, 2010). Mental Health Foundation (2016) noted that good psychological health is characterised by a person's ability to fulfil a number of key functions and activities, including with the ability to learn, to feel, to express and to manage a range of positive and negative emotions, the ability to form and maintain good relationships with others and the ability to cope with and manage change and uncertainty.

Psychological health and well-being is considered to be a combination of positive affective states and functioning effectively (Winefield., Gill, Taylor, & Pilkington, 2012). Dodge et al. (2012) argued that psychological, social, and physical resources should be part of the concept of health and well-being, because of that we included job satisfaction and positive affectivity. Negative affectivity, reflected in emotions such as anxiety, sadness, irritability, is considered to be part of psychological distress, which is strongly related with reduced quality and increased use of health services (Lahey, 2009). Nursing is an emotionally and physically demanding occupation and researches indicated that work in nursing entails high risks of experiencing stress, anxiety and depression (Gershon et al., 2007). Mental disorders may result from a variety of workplace, organisational and individual factors. These factors include working environments where nurses have lack autonomy and discretion, and where is limited the access to support and learning (Purdy, Spence Laschinger, Finegan, Ker, & Olivera, 2010); where occur high levels of emotional exhaustion and burnout (Mudallal, Othman & Al Hassan, 2017); where nurses frequently experience workplace stress (Khamisa, Oldenburg, Peltzer & Ilic, 2015), high workloads and low reward (Jasper et al., 2012), and where rotational shift patterns result in poor sleep (Lin et al., 2012). The

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nature of peer relationships in work environments experienced by nurses can also contribute to negative psychological health symptoms (Way & MacNeil, 2006). A review of studies exploring personal and work stress among nurses suggests that difficulty balancing work with family responsibilities has negative outcomes including depression and suicide (Killien, 2004). Although it is known that work related stress and burnout are associated with poor physical and psychological health outcomes (Sharma, Dhar & Tyafi, 2016), there is limited evidence regarding the relationship between burnout and job satisfaction, especially in developing contexts. Limited evidence suggests that emotional exhaustion is more significantly associated with job satisfaction than general health (Khamisa, Peltzer, Ilic, & Oldenburg, 2017).

Poor psychological health has strongly associated with productivity in nursing (Letvak, Ruhm, & Gupta, 2012), absenteeism and presenteeism (Warren et al., 2011); poor work performance, reduced productivity, workplace errors, decreased quality of patient care and low levels of patient satisfaction (Gärtner, Neiuweinhuijsen, Dijk, & Sluiter, 2012). Physical and psychological health of nurses is in direct relation with providing of patient care. A healthy workplace can result in prevention of depression, anxiety and stress and lead to promotion of satisfaction and efficiency of employees. Also, Breau and Rheaume (2014), Copanitsanou et al. (2017) and Regan and Rodriguez (2011) noted that empowering work environments is associated with positive health outcomes. Nursing is a profession, which requiring a high degree of commitment and involvement.

Leadership Behavior

The achievement of organizational goals largely depends of the leadership behavior which is related with the number of employees and organizational variables (Malik, 2013). Mosadegh Rad (2003) presented the leadership behavior, as a set of characteristics, attitudes, and skills used by a leader in different situations, depending on individual and organizational values. Daft (2005) defined the leadership behavior as a relationship between leaders and co-workers. Different dimensions of the leadership behavior have been developed, and the researchers still continue to discover what contributes to the success of leadership. Leadership behavior depending of leadership style, leaders' personal characteristics and emotions.

Theories of management is often described with different classifications based on personality and behavior, and were used to determine the characteristics and behaviors of an effective way management (Muchinsky, 2006; Spector, 2006). Management style is a construct related to the number of employees and organizational variables. Many theories and leadership styles have been developed, and different leadership styles show how to keep nurses in hospitals (Giltinane, 2013). Huber et al. (2000) explain that the leadership style as a combination of tasks and behaviors that influence employees to achieve objectives. Goethals et al. (2004) noted that the transaction leadership based on the theory that employees are motivated by rewards and discipline, but transformation leadership style focus on the team-building, motivation and participation of the employees at various levels of the organization. Transformational leadership style is based on the active role played by leaders to promote the motivation and objectives in the context of employees, but business management style is based on the mutual exchange between the leader and co-workers (Burns, 2010, p. 425). Leadership style laissez-faire is the style in which the leader gives little or no direction or control, and prefers to make its own decision. Changes occur rarely and improving quality is usually low. Laissez-faire leadership style used mostly new and inexperienced leaders or those at the end of career (Goethals, Sorenson, & Burns, 2004; Skogstad Einarsen, Torsheim, Schanke Aasland, & Hetland, 2007). Already Kouzes and Posner (1997) noted that there is no best leadership style; but leaders must choose the method of management and leadership according to the

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situations and circumstances. All kind of leadership style has advantages and disadvantages (Goethals et al, 2004; Marquis and Huston, 2009).

The leadership style associated with leaders' personality (Brown & Reilly, 2009), personal values (Potočan, Nedelko, Peleckienė, & Peleckis, 2016; Nedelko & Brzozowski, 2017), leaders' emotional intelligence (Spano-Szekely, Quinn, Griffin, Clavelle, & Fitzpatrick, 2016; Downey, Papageorgiou, & Stough, 2006; Vrba, 2007), stress and burnout (Harms, Crede, Tynan, Leon & Jeung, 2017; Zopiatis & Constanti, 2010), job satisfaction (Boamah, Spence Laschinger, Wong & Clarke, 2018; Lu, Zhao & While, 2019), psychological health (Hentrich, Zimber, Garbade & Peterman, 2016; Perko, Kinnunen, Tolvanen & Feldt, 2015; Skogstad et al., 2007), and well-being (Kuoppala, Lamminpää, Liira, & Vainio, 2008; Nielsen, Randall, Yarker, & Brenner, 2008; Skakon, Bielsen, Borg, & Guzman, 2010; Van der Heijden, Mulder, Konig & Anselman, 2017).

Personality is the set of characteristics in the individual that account for recurring patterns of behavior, thoughts, and feelings. Organizations seek to capitalize on individuals' unique habits from their knowledge, skills, and abilities toward improving organizational success. Employees are key to success, and individual personality offers a target for assessing individuals in personnel selection, work motivation, leadership, teamwork, and other key aspects of organizational functioning (Tett, Ragsdale & Simonet, 2017). Leadership style that leader will be adopted in its own way, is selected according to the knowledge, experience and skills from leader's past and depend of the personal characteristics of leader. Musek (1997, p. 242) states that characteristics, such as personal characteristics or physical and psychological characteristics, in addition to knowledge, motivation and other characteristics affect on the achievements and success. Personality characteristics of each individual are permanent characteristics, by which individuals are different. Leaders' characteristics are those, which have a significant impact on leaders' achievements and success in a conflict resolution and task performance (Musek & Pečjak, 2001). Because of that the leadership behavior also depends on the personal characteristics of each individual leader.

Different researchers highlighted different characteristics that leaders should have for successful leadership. Leadership-Toolbox (2008) presents six relevant characteristics of a successful leadership, like empathy, consistency, honesty, communication, flexibility, and beliefs. Holden Leadership Center (2009) noted that every leader should have responsibility, flexibility, good communication skills, trusting, enthusiasm, creativity, openness to change, interests for feedback, and delegating. Prive (2012) noted that honesty, delegating, good communication, sense of humor, confidence, dedication, positive attitude, creativity, intuition, and the ability to inspire are the most important leaders' characteristics for success. Economy (2014) presents that the characteristics of successful leaders are: awareness, assertiveness, empathy, responsibility, trust, optimism, honesty, and inspiration, but Javitch (2014) exposes only team skills, communication skills, interpersonal skills, and ambition. Lorber & Skela Savič (2011) found that leaders and employees in nursing in Slovenian hospitals highlighted next ten characteristics of successful leaders from the set of twenty-five characteristics: honesty, organizational skills, teamwork, decisiveness, reliability, objectivity, responsibility, communication skills, self-confidence, and ambition.

Emotions are fundamental for nursing practice (Brunton, 2005; Bulmer-Smith, Profetto-McGrath, & Cummings, 2009). Researchers (Bulmer-Smith et al., 2009; Obholzer, 2005; Waddington & Fletcher, 2005) noted that emotional labor and increasing workloads effect on health of employees in health care. Emotions play an important role in nursing probably because nursing requires not only technical expertise, but also psychologically oriented care and knowledge of self and others (Landa & López-Zafra, 2010).

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Emotional intelligence is the ability to assess and control one's emotion feelings, the emotion of others and plays an important role on an individual and group behavior and performance in the workplace (Goleman, Boyatzis, & McKee, 2002; Law, Wong, & Song, 2004; Sy & Côté, 2004;). Emotional intelligence is a term used to describe the complex ability to regulate our inspirations, understand and share the feeling of others and be able quickly recover from difficult condition (Goleman, 1995). Emotional intelligence is an important asset in professions, like nursing, where understanding people is crucial (Vitello-Cicciu, 2002). Some researchers (Clarke, 2010; Dollard, 2018; Harms & Crede, 2010; Lorber, 2015) found that emotional intelligence is an important ability of leaders for successful leadership. Lorber (2015) found that leaders' emotional intelligence was positively correlated with leaders' quality of communication, teamwork at the hospital unit, interpersonal relationships at the hospital unit, conflict solving, and quality of care. Segal and Smith (2014) noted that emotional intelligence affects on the performance at work, physical health, psychological health, and relationships. Employees in health care institutions, in which leaders have highly developed emotional intelligence have better psychological health, are more satisfied, and have better quality of healthcare (Goleman & Boyatzis, 2008). Emotional intelligence affects on job satisfaction (Coladonato, & Manning, 2017; Spano-Szekely, Quinn Griffin, Clavelle, & Fitzpatrick, 2016; Yan, Yang, Su, Luo & Wen, 2018), organizational commitment (Awais, Malik & Qaisar, 2015), well-being (Karimi, Leggat, Donohue, Farrell, & Couper, 2014, Karimi, Cheng, Bartram, Leggat & Sarkeshik, 2015; Yan et al., 2018) and reduced stress (Karimi et al., 2014, Karimi et al., 2015; Sharma, et al., 2016).

Job Satisfaction

Job satisfaction is one of the most relevant variables in the field of organizational and work psychology. It attracts the attention of researchers who aim to contribute empirically to explain its constructs, as well as to understand what elements and variables act as its consequents and antecedents. Job satisfaction is also a focus of human resources managers seeking to develop internal strategies and policies regarding the promotion of workers. The literature suggests several consequences of job satisfaction both within and outside the organization of employment. Prior research also associates job satisfaction with an increase in affective commitment to the organization, productivity (Jernigan, Beggs, & Kohut, 2002) organizational commitment and reduced absenteeism (Folami, Asare, Kwesiga, & Bline, 2014) and turnover (Zopiatis, Constanti, & Theocharous, 2014). There are also indications that labor dissatisfaction can cause damage to one's physical and mental health, and can decrease one's well-being and happiness (Bowling, Eschlema & Wang, 2010). Each person has their own views of work. Working environment effect on employees, at their level of performance and also on their satisfaction, well-being and health. Work has effect on satisfaction, well-being and health of the individual, because it provides income and means to broader social progress. Because of that job satisfaction is define in many different ways. The most widely accepted theory of job satisfaction was proposed by Locke (1976), who defined job satisfaction as "a pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences". Business Dictionary (2019) define job satisfaction as satisfaction that arising out of interplay interaction of positive and negative feelings of employees towards his or her work.

It is well known that the organizations with satisfied employees are more productive than those with unhappy employees (Hellriegel & Slocum, 2007). Researchers (Al-Hussami, 2008; Aron, 2015; Koy, Yunibhand, Angsuroch, & Fisher 2015), showed that a higher level of job satisfaction in health care, it also increases the organizational commitment of employees and the quality of patient care. The level

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of satisfaction plays an important role at employees' level as their level of health and also at the organizational level as employees' productivity (Faragher; Cass, & Cooper, 2005). Studies (Faragher et al, 2005; Kudielka et al, 2005, Marklund, Bolin, & von Essen 2008; Nadinloyi, Sadeghi, & Hajloo 2013; Thorsteinsson, Brown, & Richards, 2014) have also shown a link between psychological health and job satisfaction of employees. Psychological health and job satisfaction are the key elements of sick leaves and also the crucial reasons for leaving an organization (Coomber & Barriball, 2007). Nurses' poor psychological health is more likely to lead to problems of patients and also the quantity and quality of patient care will be reduced (Michie & Williams, 2002). Physical and psychological health of nurses is in direct relation with the providing of care, therefore a healthy workplace results the prevention of depression, anxiety and stress among nurses and lead to promotion of satisfaction and efficiency (Taghinejad, Suhrabi, Kikhvani, Jaafarpour, & Azadi, 2014). Šarotar Žižek and Mulej (2016) noted that healthy workplace can be built by occupational health promotion, whicj must take place socially responsibility and requisitely holistically. Nurses have higher than normal rates of physical illness, mortality, and psychiatric admissions (Kirkcaldy & Martin, 2000) according to the profession that they work in.

According to the literature review we can expose the importance of effective leadership and healthy working environment for employees. Working environment, together with the leadership have a significant impact on employee health and well-being. With grave impact on work productivity, patient care, staff attrition and turnover rates, a better understanding of existing relationships between work related work environment, stress, job satisfaction and psychological health health of nurses is required. The aim of the present study was to examine the level of psychological health and job satisfaction, and to find the differences between leaders and other employees in health care according to the level of job satisfaction and psychological health.

On this basis, three hypotheses were formed:

1. Increased use of the transformational leadership style affects on employees' psychological health.
2. Well, expressed leaders' characteristics affects on employees' psychological health.
3. Job satisfaction affects on psychological health.

According to hypotheses we want to find out the level of psychological health of nurses, and tested, if leaders' behavior (leadership style, leaders' characteristics, leaders' emotional intelligence) nurses' characteristics (age, years in nursing, work position, presence of chronic disease, the level of stress), and job satisfaction affect on it. We also compared the level of psychological health between leaders and other employees in nursing. The analysis was exploratory, as we know that there is no research to guide the specific hypothesis relating to these two specific work positions. As described above, there is strong evidence indicating a link between the workplace, job satisfaction, and psychological health.

METHODS

Participants and Procedure

The Institute of Public Health of the Republic of Slovenia lists 12 state hospitals with the departments of internal medicine and surgery. The current study included 8 of them. As the research instrument was used a questionnaire of closed type questions. The questionnaires were distributed in the morning shift

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by the author and by the research coordinator in the participating hospitals. The sample consisted of 1100 nurses (the response rate was 58%), which voluntarily participated in a survey in eight Slovenian hospitals with internal medicine and surgery department. Data of 640 Slovenian nurses from the current study contributed to answering different research questions. First, we received a written permission for the study from the National Medical Ethics Committee of the Republic of Slovenia (No.157/09/13) and from all the participating hospitals. The researchers randomly selected 1100 hospital nurses from eight Slovenian hospitals; all Slovenian regions were included. 85 questionnaires were sent to middle- and unit-level nurse leaders and 1015 questionnaires to other nursing employees. Nurse leaders were not selected randomly; the questionnaires were sent only to those who occupied a leading position in a department or unit which means the purposive sampling was used. 1100 hospital nurses received an application for participation, instructions, guarantee of anonymity, and an envelope with a stamp and researcher's address for returning the questionnaire.

Instruments

In the study, the questionnaire was used which included:

- Demographic and other characteristics of nurses like age, gender, years in nursing, education level, work position, the presence of chronic diseases, frequency of coping with stress in the workplace, and managing stress.
- Multifactorial Leadership Questionnaire (Bass & Avolio, 1994) contains 21 items of leadership style, measured leaders' expression of transformational, transactional and laissez-faire leadership style. The leaders self-assessed their leadership style, while other employees assessed leadership style of their direct leaders. Leadership style assessed on the 6-point Likert scale ranging from 1 (strongly disagree) to 6 (strongly agree).
- Ten leaders' characteristics (Lorber & Skela Savič, 2011). The leaders self-assessed their personal characteristics, while other employees assessed personal characteristics of their direct leaders. Leaders' characteristics assessed on the 6-point Likert scale ranging from 1 (strongly disagree) to 6 (strongly agree).
- Emotional Intelligence Questionnaire developed by Petrides & Furnham (2001). The leaders self-assessed their emotional intelligence, while other employees assessed leaders' emotional intelligence of their direct leaders. Both assessments were made on the 6-point Likert scale ranging from 1 (strongly disagree) to 6 (strongly agree).
- Positive affectivity*:* This scale was developed by Watson et al. (1988) (Positive and Negative Affect Schedule [PANAS]). Participants rated the extent to which they "in general" feel in a certain way. Items were *alert*, *excited*, *active*, *interested*, *attentive*, *determined*, *proud*, *inspired*, *strong*, and *enthusiastic.* All items scored using a 5-point rating scale (response categories: *very slightly or not at all*, *a little*, *moderately*, *quite a bit*, and *extremely*).
- Negative affectivity*:* This scale was developed by Watson et al. (1988) (PANAS). Participants rated the extent to which they "in general" feel in a certain way. Items were *jittery*, *nervous*, *irritable*, *upset*, *distressed*, *scared*, *guilty, afraid*, *ashamed*, and *hostile.* All items were scored using a 5-point rating scale (response categories: *very slightly or not at all*, *a little*, *moderately*, *quite a bit*, and *extremely*). Communication skills were assessed with 10 items, which were developed

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from Company for transformational leadership (O.K. Consulting). Communication skills assessed on the 6-point Likert scale ranging from 1 (strongly disagree) to 6 (strongly agree).

- Job satisfaction measured with a15-item satisfaction questionnaire prepared by Warr et al. (1979). The respondents were asked to assess their job satisfaction on a 6-point scale from 1 (extremely dissatisfied) to 6 (extremely satisfied).
- General Health Questionnaire (GHQ) (a 12-item version) was used for self-perceived psychological health (Goldberg & Williams, 1988). The items were scored on a four-point Likert-type scale from 0 (more than usual) to 3 (much less than usual). The sum of scores creates an overall image of psychological health. Higher scores indicated more positive (better) psychological health.

Data analysis was carried out by using the statistical software package SPSS, 25.0. P-values equal or lower than 0.05 were considered statistically significant. Exploratory factor analysis was performed on 21 items of the leadership style. The principal component analysis and principal axis factoring concluded three factors, representing the transformational, transactional and laissez-faire leadership style. For further analysis by mean scores represent only the transformational (Cronbach's α was 0.960) and transactional (Cronbach's α was 0.937) leadership as indicators. The exploratory factor analysis on 16 items of emotional intelligence concluded four factors: self-identifying of emotions; identifying others' emotions; use of emotions, and emotion regulation. For further analysis, the mean of the items was used as a score sum to represent the emotional intelligence ability as an indicator (Cronbach's α was 0.974). Exploratory factor analysis on 15 items of job satisfaction concluded two factors, internal and external job satisfaction. For further analysis, the mean of the items was used as a score sum to represent the aspects of job satisfaction as an indicator (Cronbach's α was 0.943). The exploratory factor analysis of 12 items of psychological health concluded three factors, social dysfunction, anxiety and insomnia, and loss of confidence. For further analysis, the mean of the items was used as a score sum to represent the psychological health as an indicator (Cronbach's α was 0.812). Internal consistencies (Cronbach α) for positive affectivity was 0.931 and for negative affectivity was 0.89. Cronbach's alpha coefficient exceeded 0.8 or more in all cases.

Data Analysis

The descriptive statistics, and multiple regression analysis were used to determine the effect of independent variables (transformational leadership, transactional leadership, leaders' characteristics, leaders' emotional intelligence, and job satisfaction) on the depended variable (psychological health). Because we were also interested in differences in the self-assessment of the psychological health according to the presence of chronic diseases, the exposure frequency to stress, coping with stress, level of education, and years of employment in nursing, the One-way ANOVA and Mann Whitney test were used. A p-value of <0.05 was considered to be statistically significant.

Sample Description

The study included 640 employees in nursing from eight Slovenian hospitals. 346 (54%) of them were employed in surgery departments and 294 (46%) of them were employed in internal medicine departments. 75 (12%) of them were nurse leaders and 565 (88%) of them were other employees in nursing. There were 87 (14%) men and 553 (86%) women. 24% of participants were less than 30 years old, 64%

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of them were between 30 and 50 years of age and 12% of them were older than 50 years. On average, leaders spent 8.6 years (from 0.5 to 32 years) in the leading positions. 40 (6%) of them had less than 5 years of experience in nursing, 134 (21%) of them had 5 to 10 years of experience, 218 (34%) of them had 11 to 20 years of experience, 128 (20%) of them had 21 to 30 years of experience and 120 (19%) of them had more than 31 years of experience in nursing.

RESULTS

473 (74%) respondents do not have any chronic diseases, 163 (26%) have one or more chronic diseases. 194 (30%) respondents are always exposed to stress at the workplace, 334 (52%) respondents are often exposed to stress, 109 (17%) of them are sometimes exposed to stress and only 1 (0.2%) respondent was never exposed to stress at the workplace. 525 (82%) respondents are managing stress well, but 113 (18%) respondents do not manage stress at the workplace. Table 1 presents the studied variables.

The average value of expressed transformational and transactional leadership style, personal characteristics, emotional intelligence and communication skills are at the middle level (from 3.42 to 4.36 from 6). The level of job satisfaction of employees in nursing is also at the middle level ($\bar{x}$ =3.17; s=1.755). 47% (301) respondents are satisfied with their job but 15% (96) respondents have poor psychological health. We found a statistically significant difference in the level of job satisfaction (Z=-6.640; p<0.001) and psychological health (Z=-2.219; p=0.026) according to job position. We also found statistically significant difference in positive (Z=-4.187; p<0.001) and negative affectivity (Z=--4.349; p<0.001) according to job position.

To test the influence of the leadership behavior and characteristics on job satisfaction of employees in nursing, a multiple linear regression was performed. Demographic and other nurses' characteristics (gender, age, level of education, job position and years of employment, positive affectivity, negative affectivity), transformational leadership style, transactional leadership style, leaders' characteristics, leaders' communication skills, and leaders' emotional intelligence were entered into the model as independent variables. Job satisfaction was a dependent variable. The regression analysis revealed that 67% of nurses' job satisfaction could be statistically predicted from independent variables, as presented in Table 2.

Table 1. Indicators and descriptive variables in the research

Variables	disagree/ dissatisfaction / poor health	agree/ satisfaction / good health	$\bar{x}$	s
Transformational leadership	339(54%)	289(46%)	3.77	1.354
Transactional leadership	297(47%)	330(53%)	3.63	1.414
Leaders' characteristics	288(46%)	343(54%)	4.36	1.397
Leaders' emotional intelligence	333(52%)	306(48%)	3.42	1.823
Leaders' communication skills	328(53%)	299(47%)	3.49	1.682
Job satisfaction	339(53%)	301(47%)	3.14	1.755
Psychological health	96(15%)	544(85%)	17.1	4.595

Note: $\bar{x}$ =average value; s=standard deviation

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Table 2. Regression results for the prediction of job satisfaction

Variables	B	S.E.	β	t	p-value
Gender	0.009	0.042	0.006	0.206	0.837
Age in years	-0.005	0.004	-0.001	-0.007	0.994
Years in nursing	-0.001	0.004	-0.003	-0.034	0.973
Level of education	0.003	0.014	0.007	0.213	0.831
Job position	0.093	0.062	0.058	1.113	0.078
Transformational leadership	0.072	0.022	0.197	3.501	**0.001**
Transactional leadership	-0.083	0.022	-0.236	-1.102	**0.046**
Leaders' characteristics	0.167	0.048	0.167	3.484	**0.002**
Leaders' emotional intelligence	0.162	0.091	0.179	2.117	**0.034**
Leaders' communication skills	0.180	0.063	0.210	2.756	**0.018**
Stress level	-0.110	0.032	-0.150	-3.407	**0.001**
Possitive affectivity	0.127	0.051	0.245	2.471	**0.014**
Negative affectivity	-0.105	0.044	-0.251	-2.419	**0.016**
Adjusted R^2=0.669; F=38.075; p<0.001					

Note: B=unstandardizired regression coefficient; S.E.=standard error; β=standardized regression coefficient; t=t-value of t-statistic; p=p-value of significance; R^2=coefficient of determination

We found statistically significant differences in job satisfaction according to the level of education (F=2.048; p=0.046), years working in nursing (F=1.423; p=0.033), exposure to stress (F=40.905; p<0.001) and managing stress (F=10.538, p<0.001). We have seen statistically significantly higher job satisfaction in those with higher levels of education, those who have been employed in nursing for several years, those who are exposed to stress less often, and those who are managing stress well.

To test the influence of leadership behavior, nurses' characteristics, and job satisfaction on nurses' psychological health, a multiple linear regression was performed. Demographic and other nurses' characteristics (gender, age, level of education, job position and years of employment, positive affectivity, negative affectivity), transformational and transactional leadership style, leaders' characteristics, leaders' communication skills, leaders' emotional intelligence, and job satisfaction were entered into the model as independent variables. Psychological health was a dependent variable. The results revealed that 57% of nurses' psychological health could be statistically predicted from independent variables, as presented in Table 3.

We also have found statistically significant differences in psychological health according to the level of education (F=1.994; p=0.002), years working in nursing (F=1.576; p=0.031), exposure to stress (F=8.727; p<0.001) and managing stress (F=1.610, p=0.025). We have seen statistically significantly better psychological health in those with higher levels of education, those who have been employed in nursing for several years, those who are exposed to stress less often, and those who are managing stress well. We also found that nurses with one or more chronic disease were poor psychological health than those with no chronic disease (Z=-3.062; p=0.002).

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Table 3. Regression results for the prediction of psychological health

Variables	B	S.E.	β	t	p-value
Gender	0.624	0.429	0.048	1.456	0.146
Age in years	-0.007	0.041	-0.014	-0.173	0.863
Years in nursing	-0.016	0.038	-0.035	-0.416	0.678
Level of education	0.238	0.146	0.058	1.633	0.103
Job position	0.378	0.573	0.025	1.003	0.092
Transformational leadership	1.919	0.217	0.564	8.851	**<0.001**
Transactional leadership	-1.805	0.216	-0.186	-2.336	**0.028**
Leaders' characteristics	1.011	0.471	0.109	2.147	**0.032**
Leaders' emotional intelligence	1.976	0.619	0.214	3.181	**0.003**
Leaders' communication skills	0.088	0.022	0.189	1.130	**0.047**
Stress level	-0.091	0.031	-0.235	-2.929	**0.004**
Possitive affectivity	0.104	0.019	0.392	5.484	**<0.001**
Negative affectivity	-0.095	0.015	-0.0437	-6.255	**<0.001**
Job satisfaction	2.162	0.395	0.234	5.477	**<0.001**
Adjusted R^2=0.566; F=23.185; p<0.001					

Note: B=unstandardizired regression coefficient; S.E.=standard error; β=standardized regression coefficient; t=t-value of t-statistic; p=p-value of significance; R^2=coefficient of determination

DISCUSSION

Mean scores for psychological health demonstrated that Slovenian nurses in this sample had high level of psychological health. The findings indicated that only 15% of employees in nursing were had poor psychological health. This finding is more encouraging according to the previous studies, like Calnan et al. (2001) which indicate that nearly a quarter of the respondents were suffering from mental distress, and studies (Lavoie-Tremblay et al., 2008; Nakata et al., 2004; Suzuki et al., 2004) which indicate that about one third of employees have poor psychological health. Khamisa et al. (2017) found that 60% nurses had experienced poor general health related to anxiety and insomnia in South Africa. Wei et al. (2018) in the systematic review based on the findings of the fifthy-four studies emerged five major theme: Impacts of healthy work environments on nurses' outcomes such as psychological health, emotional strains, job satisfaction, and retention; Associations between healthy work environments and nurse interpersonal relationships at workplaces, job performance, and productivity; Effects of healthy work environments on patient care quality; Influences of healthy work environments on hospital accidental safety; and Relationships between nurse leadership and healthy work environments. Acording to this results we can conclude that leadership have an important impact on psychological health and job satisfaction throught take care for healthy work environment. In the research were found differences in psychological health according to years working in nursing, level of education, absence of chronic diseases, lower presence of stress at the workplace, and good managing stress. Also, Chang et al. (2006) found higher psychological health scores relating to more years worked at the unit, and lower psychological health relating with lack of support, lack of self-controlling and higher workload. Differences in psychological

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health according to the working position can be explained with varying degrees of autonomy, duties, and decision-making process.

In Slovenian hospitals the level of nurses' job satisfaction is at the medium level. Some other researchers (Chien & Yick, 2016; Gurkova, Harokova, Džuka, & Žiakova, 2014; Jaafarpour & Khani, 2012; Lorber & Skela Savič, 2012; Vermeir et al., 2018) also found that the nurses' job satisfaction is at the medium level. But Sansoni et al. (2016) in Italian study and Khamisa et al. (2017) in South Africa. found a low level of nurses' job satisfaction. Higher level of job satisfaction positively correlated with psychological health. It means that employees with a higher level of job satisfaction tended to have better psychological health than those who with a low level of job satisfaction. Also some other studies have found a close link between psychological health and job satisfaction (Allan, Dexter, Kinsley & Parker, 2018; Faragher et al., 2005; Janyam, 2009; Khamisa et al., 2015; Khamisa et al., 2017; Nadinloyi et al., 2013). Findings of contemporary and some past researches suggest, that the level of job satisfaction has an important impact on general, and also psychological health of employees.

Better expressed leaders' characteristics, also emotional intelligence have an impact on both job satisfaction and psychological health. Behavior of leaders through leaders' characteristics have an important effect on well-being, health, satisfaction, and effectiveness (Lorber & Skela Savič, 2012; Skakon et al., 2010; Sudha, Shahnawaz, & Farhat, 2016; Winkler, Busch, Clasen, & Vowinkel, 2015). Some studies (Chiva & Alegre, 2008; Clarke, 2010; Coladonato & Manning, 2017; Crowne, et al., 2017; Kafetsios & Zampetakis, 2007; Mittal & Sindhu, 2012; Naidu, 2014; Spano-Szekely et al., 2016) describe the importance of emotional intelligence in the context of organizational leadership and job satisfaction.

Based on the six independent variables, the multiple regression analysis indicated that the transformational leadership style had a significant impact on the job satisfaction and also on the psychological health. Also other researchers found the impact of the transformational leadership style on job satisfaction (Atmojo, 2012; Boamah et al., 2018; Brewer et al., 2016; Cummings et al., 2008; Saleem, 2015), and on psychological health (Gilbert, Dagenais-Desmarais & St-Hilaire, 2017; Hentrich et al., 2016; Salanova, Lorenre, Chambel, & Martinez, 2011). Salanova et al. (2011) and Shirey (2017) noted that the transformational leadership style can help to create a more positive and psychologically healthy work environment.

A leadership style, leaders' characteristics, and leaders' emotional intelligence reflecting the leaders' behavior and have an important effect on nurses' job satisfaction and their psychological health. Our results provide a support to previous studies about the importance of nurses' satisfaction and psychological health for the organizational effectiveness and performance. Cyhlarova et al. (2010) and Goetzel et al. (2002) noted that psychological distress is a major cause of absence from work, reduction in productivity, and staff turnover. Employers should take care of employees' psychological health because psychological health affects not only employees' well-being and health, but also on the organizational effectiveness. We agree with Grawitch et al. (2007) that for every organization, it is important to meet the needs of employees, and to recognize the positive and negative effects of job satisfaction and health.

STUDY LIMITATIONS

The study has some limitations. We have studied the influence of some predictors on psychological health. For research instrument were used a multiple choice closed-ended questions, which limited to a list of answers from which the respondents were allowed to choose. The researcher was not always available

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during the research. The respondents did not get any help in the case that they did not understand the item, and also no additional explanations were provided if they maybe need it. Among the limitations is also incomplete responding for some of the scales, which reduced the effective sample size for some analyses.

SOLUTIONS AND RECOMMENDATIONS

Better collaboration and consultation between leaders and other employees in healthcare is the basis to achieve higher level of job satisfaction better psychological health of employees in every organization, not only inhospitals. The leadership style is important factor, that employees are satisfied, committed, stay at workplace and are in good health. Leaders in healthcare would benefit from initiatives, if they had better prepare on the leader role. Leaders have to learn and also explore the improvement of leadership style. Leaders have to take care about their health, because only healthy leaders can take care for employees' health. When establishing the level of job satisfaction and level of health, we have to focus on what the employees feel about their work, about personal relationships at the workplace and on the way how leaders influence on the employees.

For every leaders it's important to think about employees' wellbeing, and especially understand their preferences, passions and wishes. More that leaders know, about their employees, they will be better equipped to find winning solutions that are optimum and adapted to improve the satisfaction at work. Leaders' success is base on the ability to work with emotions and on motivation of their employees. Below are some tips for leaders, how to create an environment that is adapted to the development of positive emotions:

- Encourage communication - communication is a key element of employees' job satisfaction. An open communication is based on collaboration and on work environment that is encourage exchanges between employees.
- Care about employee wellbeing - wellbeing is often synonymous of a healthy mind. Psychology is an important element to understand effective human resource management. Simple proofs of recognition, such as a smile in the morning or a compliment have a great impact.
- Encourage team spirit - creating a team spirit is as important as employees' motivation because work is collaborative by nature.
- Provide training opportunities - when you offer training opportunities, you give your employees the chance to deepen their knowledge and get specialised in a field they enjoy.
- Involve employees - employees not only need to feel at ease within their workplace, but also useful.
- Provide feedback - good feedback can be defined by promptness, its frequency, and its precision to be effective.

CONCLUSION

In a constantly changing health system, hospitals will have to recognize the importance of satisfied and healthy employees. Hospitals can be successful and achieve organizational goals if their employees are satisfied with work and have a high level of psychological health. It is important that employer monitors

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employees' job satisfaction and take care for employees' health. That is the only way that organizations are adapt to an individual and to achieve greater efficiency, and better quality. Employees in health care institutions will be more satisfied and will have better health if they get a good example and an appropriate support by the leaders.

The employees with a high level of job satisfaction are more effective, more committed, have bertter psychological health and contribute to better quality. Based on the results and literature review, we conclude that leadership is a complex process which is connected with job satisfaction and employees' psychological health. One of the key challenges for every organization is to maintain job satisfaction and psychological health of employees and increase their motivation for quality. Leaders with good emotional capability, who are aware of their feelings, are good at controlling and understanding others. Promoting the effective leadership through formal and informal training among the leaders in healthcare may lead to more satisfied employees in nursing, better patient care, and effective leadership. The studied topic provides opportunities for further research. This research could be conducted in all healthcare institutions in Slovenia and it is necessary to monitor changes in this area every few years.

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KEY TERMS AND DEFINITIONS

Employee: Is a person who works full-time or part-time acording to the contract of employment and has their rights and duties to do a specific job. Every employee has their own skills, knowledge, experience and contribution for the employer.

Healthy Workplace: Is the place where workers and managers collabotrate to constantly improve the health, safety and wellbeing.

Job Satisfaction: Is a employees' pleasurable or positive emotional state resulting from the appraisal of individual's job or job experiences.

Leadership: Is the ability to motivate, support and lead other individuals to accomplish of common tasks and goals.

Leadership Style: Is the way of leaders' communication, think and order to provide direction, implement plans and motivate individuals.

Nursing: Is an integral part of health care system and focused on patients, families, and communities during health and disease, with the aim to achieve the highest possible level of health.

Psychological Health: It is an integral part of the general health of the individual and is also a source of wellbeing.

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Chapter 28
Combined Methods for Physical and Mental Workload:
Fatigue Evaluation – A Systematic Literature Review

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ABSTRACT

This chapter presents information about the methods that combine physical and mental workload/fatigue during ergonomic evaluation. The methods were identified through a systematic literature review. The search criteria were done through a literature search in databases like SciFinder, SciELO, ScienceDirect, etc. As result, the following methods are described: Global Load Scale, Multivariate Workload Assessment, Subjective Fatigue Symptoms Test, Fatigue Assessment Scale, Scale of Recovery for Exhaustion of Occupational Fatigue, Scale of Estimated Fatigue-Energy Points, Swedish Occupational Fatigue Inventory, NASA-TLX, Combined Cognitive and Physical Assessment, Laboratory Method of Economics and Sociology of Work, OWL Method, Ergonomic Checklist Method, RENAULT Method, Joyce Method, NERPA Method, ARBAN Method, and MAPFRE Method. As a conclusion, it is possible to affirm that there are some evaluation methods that provide better elements for an accurate evaluation, and others lack basic elements, which causes an incomplete/not accurate evaluation.

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INTRODUCTION

The changes in job processes and work design happened in the last decades were, predominantly, demographic, economic, political, and technological (Bailey & Iqbal, 2008). These changes have caused that the current work must be performed developing physical and mental efforts in a combined and/or simultaneous way (Gil-Monte, 2012). Currently, modern technology has involved new changes in industrial work, especially in decision-making involving high levels of mental load (Demands & De, 2018). As a result, the mental workload is one of the most researched concepts in ergonomics and human factors and represents an issue of increasing importance (Ayaz, 2012). In work environments, more and more cognitive demands are imposed on operators, while physical demands decrease in tasks, understanding how the mental workload affects performance is increasingly critical (Hernandez Arellano, Serratos Perez, Alcaraz, & Maldonado Macias, 2018; Young, Brookhuis, Wickens, & Hancock, 2015).

Due to high levels of mental load, levels of stress and fatigue are being generated and affecting the worker's performance, organizational productivity as well as health problems (Arce & Silvia, 2012). Stress is shown in the physiological plane altering indexes such as the reactivity of the heart rate and the increase in blood pressure. In the behavioral level, the effects of stress are revealed in problems of smoking, alcoholism, drug abuse, antisocial, and aggressive acts, which leads to a possible tendency to accidents and errors, as well as problems of relationships at work (González Muñoz & Gutiérrez Martinez, 2006).

The physical workload is the set of physical requirements that the person required during his working day (Moreno, 2015). A physical job occurs when the type of activity required by the task is primarily physical or muscular. On the contrary, the mental workload is the amount of deliberate mental effort that must be made to achieve a specific result, and it is linked to the need for information processing and decision making for the execution of the task (O'Donnell & Eggemeier, 1986).

The mental workload is used in tasks involving mainly cognitive processes, information processing and affective aspects (Arquer de, 1999). All jobs require a certain level of physical load and mental load. However, the working conditions can affect the mental load of the people (Ceballos Vásquez, Paravic Klijn, Moreno, & Barriga, 2014). For example, in work on production lines (application of adhesives, sewing, welding of electronic parts, insertion of components, etc.), transport of materials (manual or automated), and manual assembly lines (assembly of harnesses, automobiles, components electronic, etc.), are some of the jobs where there are high levels of physical and/or mental load. To assess the workload, both physical and mental aspects must be evaluated, so there are different techniques for evaluation. Similarly, physiological, behavioral and subjective changes should be considered. Some physiological measures evaluate the effect of the increase or decrease of the workload, examples of these are heart rate, heart rate variability, eye movement and brain activity (Stanton, Hedge, Brookhuis, Salas, & Hendrick, 2005). However, the number of methods that combined both kinds of efforts are limited in contrast to the great number of methods, tools, and techniques to evaluate physical or mental factors during an occupational task.

Ergonomic Evaluation

Over time, ergonomic studies have been carried out on the workload, theoretical discussions, and reviews of past investigations (Hart & Staveland, 1988; Lysaght, Ouellette-Kuntz, & Lin, 2012). A growing number of different approaches and techniques for measuring workloads have been discussed, devel-

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oped, and used. Subjective techniques seem to proliferate, this creates an opportunity and a problem for professionals and researchers of human factors. More recent studies (Hart & Staveland, 1988; Lysaght et al., 2012; Moray, 1979) have taken into account the current situation and perspective of the future on occupational stress, as well as the techniques of study for the workload in laboratories (Piñeda Geraldo and Montes Panice 2014). Studies are still being carried out where a high workload is identified and continuous improvements are sought to reduce the mental workload and improve workers' performance (Kakushi & Évora, 2014).

There are many tools that have been developed for a wide variety of situations, and human factors specialists face the choice of the most appropriate tool or tools to be able to find the information needed to make a choice and consequently causes a problem to choose the right tool (Hill et al., 1992). The ergonomic evaluation aims to determine the level of presence of risk factors in workplaces, which can generate physical health problems in workers. There are two types of analysis: that of working conditions to identify risks and risk assessment if they exist. For each factor, there are different methods that help to evaluate the level of risk associated (Asensio-Cuesta, Bastante Ceca, & Diego Más, 2012).

Combined Physical and Mental Workload

The workload is a concept that involves the capacity of the human being in complex systems considering the equipment, the training offered, the organizational, and environmental constraints. Also, it implies diverse perceptions and responses by the Workers (Jung & Jung 2001). More often, we find jobs that require the individual to attend multiple tasks at the same time, make decisions, and solve problems effectively in stable and emergency situations. The growing role of technology and the use of complex procedures have led to greater demand imposed on the worker (Stanton et al., 2005). The workload produced by an activity that responds to the requirements of a task is composed of physical load and mental load. In the next section, combined methods to assess physical and mental workload are presented in chronological order.

Objective

The objective of this research is, through a systematic review of the literature, to identify and describe the methods to evaluate physical and mental workload in a combined way.

METHODOLOGY

Step 1. Search Criteria

The identification of the combined evaluation methods presented in this article arises from a literature review, using scientific databases and journals such as SciFinder, ScienceDirect, SciELO, Dialnet, Sage Journals, Research Gate, MDPI and Springer. During the search, the selecting area of knowledge was: Ergonomics and human factors. To identify the results, the following keywords were used: "Method, Ergonomics, Combined, Mental, Physical, Study, Scale, Evaluation, Workload, Human, Factors."

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Step 2. Identification of Related Papers

During the literature research using the search criteria, more than 200 related papers where found. All of them were read and separated to classify those that would be useful for research.

Step 3. Selection of Relevant Papers

In the final step, 17 relevant papers we had selected, each paper was used to integrate the information and methods included in this article.

RESULTS: COMBINED METHODS IDENTIFIED

The combined methods in this article were selected based on the most used during investigations and ergonomic evaluations in articles. A total of 17 methods were identified, as shown in Table 1.

Table 1. Combined methods identified

Method	Paper	Author, year	Country	Citation
MAPFRE Method	Practical Ergonomics	(MAPFRE, 1975)	Spain	106
Laboratory Method of Economics and Sociology of Work (LEST)	For an analysis of the working conditions of the worker in the company	(Guelaud, Beauchense, Gautrat, & Roustrang, 1977)	France	95
RENAULT Method	Job profiles "method of analysis of working conditions"	(Renault, 1977)	France	84
Subjective Fatigue Symptoms Test (SFST)	Three characteristic patterns of subjective fatigue symptoms	(Yoshitake, 1978)	Japan	267
ARBAN Method	ARBAN: A new method for analysis of ergonomic effort. Applied Ergonomics	(P. Holzmann, 1982)	Sweden	78
Global Load Scale (GLS)	Absolute Magnitude Estimation and Relative Judgement Approaches to Subjective Workload Assessment.	(Vidulich, Field, & Tsang, 1987)	USA	70
NASA- TLX (Task Load Index)	Development of NASA-TLX (Task Load Index): Results of Empirical and Theoretical Research.	(Hart & Staveland, 1988)	USA	9034
Joyce Method	Applied Industrial Ergonomics Reference Manual	(Joyce Institute Training Design Team, 1992)	USA	3
Swedish Occupational Fatigue Inventory (SOFI)	Perceived quality of fatigue during different occupational tasks Development of a questionnaire Elizabeth Åhsberg	(Ahsberg, Garnberale, & Kjellberg, 1997)	Sweden	168
OWL Method	Establishment of overall workload assessment technique for various tasks and workplaces	(Jung & Jung, 2001)	South Korea	90
Multivariate Workload Assessment (MWE)	Multivariate workload evaluation combining physiological and subjective measures.	(Miyake, 2001)	Japan	165

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Table 1. Continued

Method	Paper	Author, year	Country	Citation
Fatigue Assessment Scale (FAS)	Fatigue Assessment Scale (FAS)	(Michielsen, H. J., De Vries, J., & Van Heck, 2003)	Netherlands	204
The Scale of Recovery for Exhaustion of Occupational Fatigue (OFER)	Development and validation of a scale to measure work-related fatigue and recovery: The Occupational Fatigue Exhaustion/Recovery Scale (OFER).	(Winwood, Winefield, Dawson, & Lushington, 2005)	Australia	169
The Scale of Estimated Fatigue-Energy Points (SEFEP)	The fatigue-energy dimension as an indicator of presentism: validity of a scale in Mexican workers.	(Juárez-García, 2007)	Chile	18
NERPA Method	Novel Ergonomic Postural Assessment Method (NERPA) Using Product-Process Computer-Aided Engineering for Ergonomic Workplace Design.	(Sanchez-Lite A, Garcia M, Domingo R, 2013)	Spain	21
Combined Cognitive and Physical Assessment (CCPA)	CCPE: Methodology for a combined evaluation of cognitive and physical ergonomics in the interaction between humans and machines.	(Bligárd & Osvalder, 2014)	Sweden	17
Ergonomic Checklist Method	Influences on the use of observational methods by practitioners when identifying risk factors in physical work.	(Diego-Mas, Poveda-Bautista, & Garzon-Leal, 2015)	Spain	26

Source: Own creation with data collected in databases.

DESCRIPTION OF THE METHODS

MAPFRE Method

This method, also called the method of ergonomic analysis of the workplace, aims to be a simplified ergonomic assessment, in which, from a general analysis of the conditions of the position, it can be addressed deeper and specific studies of the aspects considered as negative. This method carries out a triple evaluation: descriptive, of the work position (machines and materials used, description of the tasks that are carried out).

The valuation of each factor ranges from 1 (very favorable condition) to 5 (an unfavorable condition that needs to be corrected). The second part is the evaluation, where the factors to be considered are established, covering aspects related to the physical environment (noise, temperature, etc.), the physical load (manual lifting of loads, main posture, etc.), nervous load (operations mental and level of attention) and psychological (individual autonomy, cycle repeatability, schedules). The third part is dedicated to correction measures, technical improvements to be made in the analyzed jobs, all showed in Table 2. Because it is a mixed-method, in each one of the factors, an assessment of the conditions by the worker is introduced, also in five qualitative grades: (++) very acceptable, (+) acceptable, (●) neutral, (-) unfavorable, (-) very unfavorable (MAPFRE, 1975).

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Table 2. Items considered in the MAPFRE method

Items
Job Position. Equipment. Space Layout.
Static Physical Load
Dynamic Physical Load
Attention Sensory-Motor Coordination
Complexity Content of Work
Autonomy and Decisions
Monotony and Repetitive
Communications and Social Relations
Shifts. Schedules Pause.
Accident Risks
Chemical Contaminants
Noises and Vibrations
Thermal Conditions
Lighting. Chromatic Environment
Radiation. Other Environmental Factors

Source: (MAPFRE, 1975)

Laboratory Method of Economics and Sociology of Work (LEST)

Aims to evaluate the working conditions in the most objective and global way possible, establishing a final diagnosis that indicates whether each of the situations considered in the position is satisfactory, annoying or harmful. It is a global method that considers each aspect of the job in a general way, providing a first assessment that allows establishing if a deeper analysis with specific methods is required.

The objective is, according to the authors, to evaluate the set of factors related to the content of the work that can have an impact both on the health and on the personal life of the workers. Before the application of the method must have considered and resolved the occupational risks related to Health and Safety at Work since they are not contemplated by the method. To determine the diagnosis, the method considers 16 variables grouped into 5 aspects (dimensions): physical environment, physical load, mental load, psychosocial aspects and work time (Diego-Mas et al., 2015).

The evaluation is based on the scores obtained for each of the 16 variables considered, shown in Table 3. The simplified variables are the thermal environment, light environment, noise, vibrations, attention, and complexity.

Evaluate the mental load based on four indicators:

- Time constraint
- Complexity - Speed
- Attention
- Thoroughness (Guelaud et al., 1977).

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Table 3. Items considered in the laboratory method of economics and sociology of work (LEST)

Items				
Physical Environment	Physical Load	Mental Load	Psychosocial Aspects	Work Time
Thermal Environment	Static Charge	Time Constraint	Initiative	Working Time
Noise	Dynamic Load	Complexity	Social Status	
Illumination			Communications	
Vibrations			Relationship with the Command	

Source: (Guelaud et al., 1977)

RENAULT Method

It aims to make an assessment from an objective point of view. This method has been made from an industrial experience started in the 1950s by specialists in working conditions and production of the R.N.U.R. (Regie Nationale des Usines Renault (National Director of the Renault Factories)) and is mainly applicable to repetitive short-cycle jobs. It intends to make an assessment from an objective point of view. This method has been compiled from an industrial experience begun in the fifties by specialists working conditions and production of the R.N.U.R. and it is mainly applicable to repetitive, short-cycle jobs, as is the case of assembly lines in automobile manufacturing. For this, the analysis of eight factors that are evaluated through 23 criteria is considered, showed in Table 4, to which are added four other factors related to the Global Conception of the Post (Renault, 1977).

Table 4. Items considered in the RENAULT method

Items							
Security	Physical Environment	Physical Load	Mental Load	Autonomy	Independent Work Relationships	Repeatability	Contented of The Work
	Thermal Environment	Main Posture	Mental Operations	Individual Autonomy	Dependents of Work	Repeatability of The Cycle.	Potential
	Sound Environment	Work Effort	Level of Attention	Group Autonomy			Responsibility
	Artificial Lighting	Work Posture					Interest of Work
	Vibrations	Effort					
	Industrial Hygiene	Maintenance Posture					
	The Appearance of the Position						

Source: (Renault, 1977)

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Subjective Fatigue Symptoms Test (SFST)

The Subjective Fatigue Symptoms Test (SFST) was developed by the Industrial Fatigue Research Committee of the Industrial Health Association of Japan (Yoshitake, 1978), and it is composed of 30 items showed in Table 5, that explore the presence of symptoms of fatigue. Originally, the SFST classified the items into three groups: physical, mental, and neurosensory (Saito, 1970). However, (Saito, Kogi, & Kashiwagi, 1970) subjected the instrument to factorial validity obtaining three factors: drowsiness and heaviness, projection of physical discomfort, and difficulty concentrating. Yoshitake, (1978) related the first factor with undifferentiated work, the second with physical work and the third with mental work. Additionally, Yoshitake proposed the qualification of the test through the percentage of affirmative answers. In addition, it determined that, if a person answers affirmatively to 6 of the 10 questions of one of the analyzed dimensions, it can be considered that this dimension presents as a symptom of fatigue.

Table 5. Items considered in the subjective fatigue symptoms test (SFST)

Items		
Group A (General)	**Group B (Mental)**	**Group C (Physical)**
1. Feel heavy in the head	1. Find difficulty in thinking	1. Have a headache
2. Feel tired in the whole body	2. Become weary while talking	2. Feel stiff in the shoulder
3. Feel tired in the legs	3. Become nervous	3. Feel pain in the waist
4. Give a yawn	4. Unable to concentrate attention	4. Feel constrained in breathing
5. Feel the brain hot or muddled	5. Unable to have an interest in thinking	5. Feel thirsty
6. Become drowsy	6. Become apt to forgot things	6. Have a husky voice
7. Feel strained in the eyes	7. Lack of self-confidence	7. Have dizziness
8. Become rigid or clumsy in motion	8. Anxious about things	8. Have a spasm of the eyelids
9. Feel unsteady while standing	9. Unable to straighten up in a posture	9. Have a tremor in the limbs
10. Want to lie down	10. Lack of patience	10. Feel ill

Source: (Yoshitake, 1978)

ARBAN Method

It is a method for the ergonomic analysis of work, which includes work situations that involve very different postures and body loads. The idea of the method is that all the phases of the analysis process that imply a specific knowledge about ergonomics are taken by the film crew and a computer routine. All the tasks that the researcher must carry out in the analysis process are designed in such a way that they appear as evident using systematic common sense.

The ARBAN analysis method contains four steps: 1. Recording of the workplace situation in video or film. 2. Coding of the posture and the situation of the load in a series of "frozen" situations very close. 3. Computerization. 4. Evaluation of the results. When evaluating the film, the human body is regarded as a conglomerate of functional units, based on the logical coordinated sequence of movements achieved by most human beings while working.

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The intervals between the analyzed frames depend on the properties of the work situation and dividing the cycle time into 100-200 equal time intervals is often enough for simple tasks. It provides a representative sample of the working postures throughout the job and allows a quick evaluation procedure. However, the intervals should normally not exceed a few seconds, to avoid loss of information. This method is used to offer a simple and easily handled procedure with a broad field of application. Such methods normally contain two sources of error - the man and the system and is designed to enable both man and machine to do what they can best accomplish, thus reducing the risk of error. Even persons with limited knowledge of ergonomics will be able to use the method after a few hours of training.

The computer calculates the figures for total ergonomic tension throughout the body, as well as in different parts of the body separately, shown in Table 6. They are presented as 'Ergonomic tension/ time curves', where heavy load situations occur as curve peaks. The work cycle can also be divided into different tasks, where the stress and duration patterns can be compared. The integral of the curves are calculated for the comparison of a single figure of different tasks, as well as different work situations. The results of the analysis make it possible to identify critical phases of the studied work and to compare different working conditions. The method allows the analyzer to work in a correct ergonomic sequence so that his efforts produce the best result. Subtasks that do not require the comprehension of the human brain or exceed its capabilities are handled by technical equipment such as video and computers (P. Holzmann, 1982).

Table 6. Items considered in the ARBAN method

Items
Head - neck
Right shoulder - arm
Left shoulder - arm
Trunk – back
Right leg
Left leg

Source: (P. Holzmann, 1982)

Global Load Scale (GLS)

It was proposed by Vidulich, Field & Tsang (1987) for the evaluation of the mental load experienced by individuals. GLS is a bipolar scale from 0 to 100, with intervals of 5 units, where the 0 represents a very low mental load and 100 very high mental load. This scale has been used, for example, in the study by Zeitlin, (1995) whose objective was to evaluate the mental load associated with driving a car under different situations (urban or rural environment) and combinations of additional tasks. In Table 7, it shows two rating scale techniques employing an absolute magnitude estimation method were compared to a relative judgment method for assessing subjective workload. The absolute estimation techniques used was a unidimensional Overall Workload scale and the other was the multidimensional NASA-Task Load Index technique. The techniques were used to assess the subjective workload of various single and dual tracking conditions. Thomas Saaty's Analytic Hierarchy Process was the unidimensional relative judg-

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ment method used. The validity of the techniques of this method was defined as their ability to detect the same phenomena observed in the tracking performance. Reliability is assessed by calculating test-retest. The Saaty Analytic Hierarchy Process was found to be superior in validity and reliability using this method. These findings suggest that the relative judgment method would be an effective addition to the currently available subjective workload assessment techniques. An equally used evaluation modality is that of binary comparisons, a method that essentially consists of comparing two to two the mental load associated with the tasks that make up a certain activity, so that for each task it can be calculated in a matrix double entry the load index resulting from the average of the times that people attribute a greater value with respect to the other tasks considered (Vidulich et al., 1987).

Table 7. Scores considered in the global load scale (GLS)

Scores
Overall Workload Scale – OW
Nasa-Task Load Index (TLX)
Saaty's Analytic Hierarchy Process

Source: (Vidulich et al., 1987)

NASA- TLX (Task Load Index)

This procedure developed by Hart & Staveland (1988) distinguishes six dimensions of mental load (mental demand, physical demand, temporal demand, yield, effort, and level of frustration), from which it calculates a global index of mental load. In various laboratory investigations, it has been proven that it is sensitive to a variety of tasks and that each of the six subscales, showed in Table 8 who provides independent information about its structure.

The application of this instrument is carried out in two phases: a weighting phase, at the time prior to the execution of the task and another phase immediately after the execution, called the scoring phase. It is part of the base that the specific sources of load imposed by the different tasks are determinant in the experience of load and the subjective feeling of load, therefore the prerequisite is that the subjects themselves make a weighting in order to determinate the extent to which each of the six factors on each specific task or subtask.

The objective of this phase is to define the load sources. It consists in presenting to the people the definitions of each one of the dimensions in order to compare them by pairs (binary compares) and choose for each pair, which is the element that is perceived as a greater source of the load. From this election you get a weight for each dimension, depending on the number of times you have been chosen.

These weights can take values between 0 (for the dimension that has not been chosen on any occasion and therefore is not considered relevant) and 5 (for the dimension that has always been chosen and therefore is the most important source). The same set of weights can be used for variations of the same task or for a group of subtasks. In Addition, the weights give diagnostic information about the nature of the workload imposed by the task as they provide data about two sources of interpersonal variability:

A. The interpersonal differences in the definition of the workload in each task considered.

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B. Differences in workload sources between different tasks. The second requirement is to award value for each factor, which represents the magnitude of each factor in a given task.

In this scoring phase, people value the task or subtask they have just done in each of the dimensions, marking a point on the scale presented to them. Each factor is presented in a line divided into 20 equal intervals (a score that is reconverted to a scale over 100) and bipolarly limited by some descriptors (for example: high/low and bearing in mind the definitions of the dimensions. One of the main advantages of this method is its applicability in the real labor framework as people can directly and quickly rate the task done either right after its execution or retrospectively. A video recording can be useful to improve the memory of the activity, stop if necessary, in each segment of the task. In experiences carried out on retrospective valuations, it has been found that there is a high correlation between the data obtained and the scores obtained in a way Immediate (Archer & Nogare, 2001).

Table 8. Items considered in the NASA- TLX (Task Load Index)

Items	
Subscales	**Subscales for rating**
Mental Demand	Mental Demand: How much mental and perceptual activity was required? Was the task easy or demanding, simple or complex?
Physical Demand	Physical Demand: How much physical activity was required? Was the task easy or demanding, slack or strenuous?
Temporal Demand	Temporal Demand: How much time pressure did you feel due to the pace at which the tasks or task elements occurred? Was the pace slow or rapid?
Performance	Overall Performance: How successful were you in performing the task? How satisfied were you with your performance?
Effort	Effort: How hard did you have to work (mentally and physically) to accomplish your level of performance?
Frustration	Frustration Level: How irritated, stressed, and annoyed versus content, relaxed, and complacent did you feel during the task?

Source: (Hart & Staveland, 1988)

Joyce Method

It is a method for the ergonomic evaluation of jobs, whose objective is to eliminate or minimize the causes of Damage due to Accumulated Trauma (DTA's) related to work. The method allows identifying the jobs that present or are susceptible to present problems of this type, as well as to determine the associated risk to be able to initiate actions that resolve them. It consists of five steps, shown in Table 9.

The risk estimation is done with the checklist during the data collection and its evaluation, the possible results of this estimation are jobs of low, medium or high risk, which facilitates the prioritization of problems. Once the evaluation list is applied, a list of possible situations that could cause damage to workers' health is made. This method is very complete to detect potentially risky jobs in developing DTA's, but it does not detect physical fatigue or metabolic expense which are important processes in the ergonomic evaluation and the worker's involvement is only done if a detailed analysis is necessary (Joyce Institute Training Design Team, 1992).

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Table 9. Items considered to the Joyce method

Items
Data collection
Data evaluation
Problem prioritization
Solution design
Validation

Source: (Joyce Institute Training Design Team, 1992)

Swedish Occupational Fatigue Inventory (SOFI)

Swedish Occupational Fatigue Inventory (SOFI) is an instrument composed of 25 items (expressions) showed in Table 10, that evaluates five dimensions of fatigue: lack of energy, physical fatigue, physical discomfort, lack of motivation, and drowsiness, all of them related to physiological, cognitive, motor, and emotional responses.

Table 10. Factors and items considered in the Swedish occupational fatigue inventory (SOFI)

	Factors of fatigue				
	Lack of energy	**Physical exertion**	**Physical discomfort**	**Lack of motivation**	**Sleepiness**
Items	Overworked	Sweaty	Tense muscles	Uninterested	Sleepy
	Worn out	Breathing heavily	Stiff joints	Passive	Falling asleep
	Exhausted	Palpitations	Numbness	Listless	Drowsy
	Spent	Warm	Hurting	Indifferent	Yawning
	Drained	Out of breath	Aching	Lack of involvement	Lazy

Source: (Ahsberg et al., 1997)

According to Ahsberg, Garnberale, & Kjellberg (1997), the underlying structure of the instrument corresponds to a new qualitative and quantitative description of the physical (physical exertion and physical discomfort) and mental (lack of motivation and sleepiness) dimensions of perceived fatigue. Together with these, the factor ‘‘lack of energy’’ corresponds to a fatigue dimension with both physical and mental characteristics.

The subject must respond to the extent to which these expressions describe how he usually feels at the end of his workday using a scale of the analogous visual type of 11 response points, where 0 is interpreted as “nothing at all” and 10 as “in a high degree”. The first version of this instrument was made in Sweden by Ahsberg et al., (1997) and was subsequently revised by Ahsberg, (2000) using confirmatory factorial analysis, and the number of expressions in each dimension was reduced to four (the questionnaire finally consisted of 15 elements). Previously, in accordance with the information from earlier research, two of the original expressions had been replaced by new ones. Finally, the response scale was changed to one with seven points (González Gutiérrez, Jiménez, Hernández, & López, 2005).

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OWL Method

It was developed to evaluate the level of general workload (OWL) by introducing sets of variables and application of the hierarchical analysis process (AHP) to estimate the external workload imposed on a human operator in systems man-machine. The number of factors considered as potential sources of occupational workload is seemingly limitless. For this, a five-point linguistic variable set scale was constructed, and their hierarchical prioritization procedures were set up (weight of load: 'very light,' 'light,' 'medium,' 'heavy,' 'very heavy,'). Whether the source of an imposed workload is physical or mental in an industrial environment, it may influence an operator's health, performance, or productivity. of the task and the workplace variables (e.g., physical job demand, environmental, postural, and mental demand workloads) which can capture the operator's perception of a workload are introduced as a value of variables.

It must be pointed out that some factors (i.e., task and workplace variables) might be sources of workloads for some individuals but not for others. These differences can arise from various individual characteristics of a physical, mental, attitudinal, or emotional nature. Individual differences in such characteristics might be reflected, for example, in everyone's differences in capacities to adjust or adapt to different external conditions. In addition, a person's perception of his or her own ability to deal with specific job requirements and its external features could cause some people to experience workload but not others.

The task and workplace variables (e.g., physical, environmental, postural, and mental job demand workloads), showed in Table 11, which can obtain the operator's perception of the workload are selected as workload factors and the AHP technique is used to collect different weights. Since there exist various perceptions and responses to a workload by different individuals, the analytic hierarchy process (AHP) is introduced to collect different weighting factors. It organizes basic rationality by breaking down a problem into its smaller constituent parts and then guides subjects through a series of pairwise comparison judgments to express the relative strength or intensity of impact on a subject's workload in the hierarchy. This approach calculates the ratio of the subjective judgment from each type of workload and weighs each workload based on the impact on the subject's perception. Finally, OWL is calculated using a computer-assisted system to determine the level of overall workload impinged on an operator. The OWL was implemented in an actual industrial environment from a physiological and epidemiological viewpoint to determine the validity of the model (Jung & Jung, 2001).

Table 11. Items considered in the OWL method

Items			
Physical job demand	Environment factors	Postural Discomfort	Mental Job Demand
Weight	Working Climate	Standing	
Frequency	Light	Stooping	
Duration	Noise	Squatting	
Distance	Vibration	Twisting	
	Exposure to Chemicals		

Source: (Jung & Jung, 2001)

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Multivariate Workload Assessment (MWE)

The multivariate workload assessment, which integrates physiological parameters and one subjective parameter through Principal Components Analysis (PCA), was proposed to characterize task-specific responses and individual differences in response patterns to mental tasks (Miyake, 2001). With the aim of integrating in the workload measurement parameters with different origin in a single index, the multivariate workload assessment (MWE) allows to mix physiological parameters, showed in Table 12 (heart rate variability, changes in the sanguine pressure of the fingers of the hands and the perspiration) with subjective parameters (mental demands, temporary demand and global effort) by means of the technique of PCA.

This method employs three subscales: mental demand, temporal demand, and effort out of six subscales in the NASA-Task Load Index were used as subjective scores. These parameters were standardized within each participant and then combined. It was possible to assess workload using this method from two different aspects, i.e. physiological and subjective, simultaneously. As a result of this combination, a workload index with a range of 0 to 1 is obtained (Miyake, 2001).

Table 12. Items considered in the multivariate workload assessment (MWE)

Items
Heat rate variability
Finger plethysmography amplitude
Perspiration
Mental demand
Temporal demand
Effort

Source: (Miyake, 2001)

Fatigue Assessment Scale (FAS)

The Fatigue Assessment Scale (FAS) is a method designed to assess the total fatigue using 10 items showed in Table 13, which is divided into two dimensions: physical fatigue and mental fatigue. The final score of the total fatigue is obtained by adding the values of the 10 items included in the questionnaire. In the same way, the physical and mental fatigue score is obtained.

A five-point Likert scale is used. An answer to every question must be given, even if the person does not have any complaints. Where 1 means “never”, 2 “sometimes”, 3 “regularly”, 4 “almost always” and 5 “always”. Scores on question 4 and 10 should be recorded (1=5, 2=4, 3=3, 4=2, 5=1). Subsequently, the total FAS score can be calculated by adding the scores on all questions (recorded scores for questions 4 and 10). The total score ranges from 10 to 50. A total FAS score < 22 indicates no fatigue, a score ≥ 22 indicates fatigue. All online versions of the FAS calculate the FAS scores automatically: a total score, as well as mental and physical score, will be provided (Michielsen, H. J., De Vries, J., & Van Heck, 2003)

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Table 13. Items considered in the fatigue assessment scale (FAS)

Items
1. I am bothered by fatigue
2. I get tired very quickly
3. I don't do much during the day
4. I have enough energy for everyday life
5. Physically, I feel exhausted
6. I have problems to start things
7. I have problems to think clearly
8. I feel no desire to do anything
9. Mentally, I feel exhausted
10. When I am doing something, I can concentrate quite well

Source: (Michielsen, H. J., De Vries, J., & Van Heck, 2003)

Used in conjunction with other techniques of inquiry, FAS is valuable for the study of the physical and cognitive demands of different types of work processes. This method is now available in more than 15 languages. FAS is quick and easy to complete and not time-consuming. It is also helpful for physicians and other health care workers in the follow-up of their patients in addition to the regular functional tests such as lung function tests. The FAS has proven to be a valid questionnaire to assess fatigue in patients with ILD, but also in many other patients with chronic diseases and it was used few times for industrial use (Cano-Climent, Oliver-Roig, Cabrero-García, de Vries, & Richart-Martínez, 2017).

The Scale of Recovery for Exhaustion of Occupational Fatigue (OFER)

The Occupational Fatigue Exhaustion Recovery Scale (OFER) is a method designed to assess the recovery that a worker requires after their activities, it was developed by Winwood, Winefield, Dawson, & Lushington (2005) in the Netherlands. The 20-item scale showed in Table 14, has been developed and validated using data from three study populations specifically to measure work-related fatigue and possesses robust, gender-bias free psychometric characteristics. The three subscales identify and distinguish between chronic work-related fatigue traits, acute end-of-shift states, and effective fatigue recovery between shifts and analyze fatigue in 3 dimensions (called fatigue states): Chronic Fatigue (CF), acute fatigue (AF), and recovery between work shifts (RT).

The rating scale used in this method is Likert type from 0 to 6, where 0 is "strongly disagree", 1 is "disagree", 2 "little disagree", 3 "no opinion (neutral)", 4 " bit of agreement ", 5" agree "and 6" totally agree." This scale is suggested as a potentially valuable new tool for use in work-related fatigue research (Winwood et al., 2005).

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Table 14. Items considered in the fatigue assessment scale (FAS)

Items
1. “I use a lot of my spare time recovering from work”
2. “I often feel at the end of my rope with my work”
3. “I often dread waking up to another day of my work”
4. “I often wonder how long I can keep going at my work”
5. “I feel most of the time I’m living to work”
6. “My head feels dull/heavy a lot of the time”
7. “I often feel exhausted at work”
8. “Too much is expected of me at my work”
9. “My working life takes all my energy from me”
10. “I feel exhausted all the time”
11. “I usually have lots of energy to give my family or friends”
12. “I wish I had more ‘get up and go’ generally”
13. “I have the energy for my hobbies/relaxing activities in my spare time”
14. “I have plenty of reserve energy when I need it”
15. “I can’t recover my energy completely between work shifts”
16. “I fully rested at the start of each workday/shift”
17. “Worrying about work issues makes it hard to relax at home”
18. “I usually recover my energy within a few hours of getting home from work”
19. “I usually feel fully relaxed by the time I go to bed”
20. “I don’t get enough time between work shifts to recovery my energy fully”

Source: (Winwood et al., 2005)

The Scale of Estimated Fatigue-Energy Points (SEFEP)

The Scale of Estimated Fatigue-Energy points (SEFEP) allows relating fatigue with the energy that a worker uses when performing a specific task (Juárez-García, 2007). Whose methodology of application requires the evaluation at the beginning and at the end of the working day; an estimated point (average) is obtained from the objective and subjective items, shown in Table 15.

Table 15. Items considered in the scale of estimated fatigue-energy points (SEFEP)

Items	
Objective	**Subjective**
Simple visual	Yoshitake’s fatigue scale
Auditory	Maslach’s MBI-GS emotional exhaustion sub-scale
Discriminatory time reaction tests	
Precision	
Speed of psychomotor performance test	

Source: (Juárez-García, 2007)

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SEFEP contains 10 levels of punctuation and its interpretation is inverse to the Borg scale (0-10) (Borg, 1985). Consider the score of 10 as the best on the scale, that is, it is interpreted as extremely strong, animated and full of energy and level 1 is interpreted as extremely exhausted and exhausted. As concurrent criteria, several objectives and subjective indicators were used (Juárez-García, 2007).

NERPA Method

It is a novel method for the ergonomic postural evaluation method, fit for product-process design, which was developed with the help of a digital human model together with a 3D CAD tool. NERPA is widely used in the aeronautic and automotive industries. The power of 3D visualization and the possibility of studying the actual assembly sequence in a virtual environment can allow the functional performance of the parts to be addressed. NERPA works as a modified version of the method of rapid evaluation of upper extremities (RULA), showed in Table 16, this tool was developed for use in typical industrial manual assembly tasks in the automotive industry. The effectiveness of RULA and NERPA was compared by a real manufacturing process.

Table 16. Items considered in the NERPA method

Items
Stature
Eye height
Mid-shoulder height
Elbow height
Wrist height

Source: (Sanchez-Lite A, Garcia M, Domingo R, 2013)

The NERPA method, which modifies the evaluation of some joint ranges while maintaining the same evaluation structure as the RULA method, presents significant differences with respect to RULA. For the working conditions in which it was used, this method can detect positions with ergonomic risk and is more sensitive to the detection of an ergonomic improvement than the RULA method. The two methods lead to significantly different results. Under the methodological concept presented in this document, other ergonomic risk factors could be added to the NERPA method, which would allow the development of a general risk assessment methodology for industrial production within the framework of risk prevention (Sanchez-Lite A, Garcia M, Domingo R, 2013).

Combined Cognitive and Physical Assessment (CCPA)

It has a proactive and analytical approach to assess the imbalances in the interaction between the human being and the artifact. The CCPA methodology is based on the methods of cognitive assessment and predictive analysis of human errors. These methods have been further developed into four new methods: enhanced cognitive assessment, predictive use error analysis, predictive ergonomic error analysis, and generic task specification.

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In addition to the changes that avoid the weaknesses and deficiencies identified in the original methods, the most important aspect of the CCPA methodology is that it deals with cognitive and physical ergonomics together. The objective of CCPA is to predict presumed discrepancies in the interaction of the human-machine, such as physical and mental workload, use of errors, usability problems and ergonomic errors, using a process that supports the cognitive processes of the evaluators. The purpose of examining the problems of physical and cognitive usability and errors of use in this interaction is to achieve a more comprehensive global assessment. In addition, this results in a more cost-effective evaluation of what would be the case if separate methods of cognitive and physical ergonomic assessment were used. CCPA also has a deep theoretical base in both areas.

CCPA is a task-based methodology that uses a structured and systematic questioning process to look for imbalances at each step of the interaction, as well as at a more general level of the system, showed in Table 17. The methodology was developed during work on product development projects in the industry and the academic world, where it was judged that existing evaluation methods did not provide enough information on interaction problems. The research was driven by problems and was conducted as action research. During and after development, CCPA and its methods were used in a series of evaluations in which the methodology predicted, identified and presented supposed imbalances in a structured manner. The strength of CCPA is that its development was iterative and based on reality, as well as on a solid theoretical basis.

The greatest strength of CCPA is the structured and systematic search for imbalances and the integration of cognitive and physical factors. The main weakness of CCPA is that it is more cumbersome and complicated to learn and use than the original methods, as well as compared to other individual HFE methods. However, CCPA generates a more complete result, which is presented in clear descriptions, than in the case of other methods. CCPA also contributes to consensus and knowledge transfer in the evaluation group in a product development project. To conclude, this thesis has resulted in a methodology to predict, identify and present presumed differences in the interaction between the human being and the artifact. However, more work is needed to evaluate the reliability of the methodology and to develop computer aids to simplify its use (Bligård & Osvalder, 2014).

Table 17. Items considered in the combined cognitive and physical assessment (CCPA)

Items			
Task Demands	Automation Levels	Mental Workload	Physical Workload
Task Type (TT)	Power (P)	Mental Processing Type (MPT)	Force Resources (FR)
Task Category (TC)	Data Collection (DC)	Attention Resources (AR)	Fine Motor Resources (MR)
Performance/Accuracy (P/A)	Data Analysis (DA)	Memory Resources (R)	Speed Resources (SR)
Time Pressure (TP)	Decision Making (DM)	Processing Resources (PrR)	Body Loads (BL)
Performance Shaping Factors (PSF)	Control (CO)	Frustration and Stress (FS)	Body Contact (BC)
Frustration	Execution (EX)	Superimposed Mental Activities (SMA)	
	Supervision (S)		

Source: (Bligård & Osvalder, 2014)

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Ergonomic Checklist Method

Developed by the International Labor Office & International Association of Ergonomics (1991), the ergonomic risk checklist is a tool whose main objective is to contribute to a systematic application of ergonomic principles. It was developed with the purpose of offering practical and low-cost solutions to ergonomic problems, particularly for small and medium enterprises. It aims to improve working conditions in a simple way, through the improvement of safety, health, and efficiency. It is a particularly suitable tool to carry out a basic level assessment (or initial risk identification) prior to the advanced level assessment.

The ergonomic checklist performs an analysis of ten different areas in which ergonomics influence working conditions. In Table 18, it shows the grouped items who contains from 10 to 20 checkpoints. In its entirety, the list consists of 128 points. Each checkpoint indicates an action. Options and some additional indications are given for each of the actions. In this way, there is the possibility to select the checkpoints that are applicable to a specific workplace and use the action proposals as an adapted checklist.

Table 18. Items considered in the ergonomic checklist method

Grouped Items
Material Handling and Storage
Manual tools
Safety of Production Machinery
Drawing of the Workstation
Illumination
Locals
Environmental risks
Hygienic and Local Rest Services
Individual Protection Equipment
Organization of Work

Source: (Diego-Mas et al., 2015)

The way of using the list is as follows:

- Define the work area that will be inspected. In the case of a small company, it can be the entire work area.
- Know the most important characteristics and factors of the workplace that will be analyzed, such as, for example, the different products and processes that are carried out, the number of workers, shifts, breaks, overtime and any problems or incident that may exist in the workplace.
- Use the checklist to select and apply the checkpoints that are relevant in the workplace.
- Read each item carefully to know how to apply it, in case of doubt, ask the bosses or employees.
- Organize a discussion group using the user-specific checklist as a reference material. A group of people can examine the workplace to conduct a field study.

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- Mark at each checkpoint, in the section "Do you propose any action?", A "YES", if the checkpoint is being met. If you think it should be fulfilled and it is not, mark a "NO". Use the Observations section if you wish to add any suggestions or locations.
- Once finished, re-analyze the items marked "NO". Select those whose improvements seem more important and mark them as a priority.

During the group discussion, existing information on "preventive actions" and "recommendations" could be useful as additional information to the selected checkpoints. In addition, good working practices and conditions should also be specified, where they are observed (Diego-Mas et al., 2015).

CONCLUSION

Through the review, using the information gathered in the research conducted in the databases, it was possible to conclude that there are combined evaluation methods most used than others because of the wide variety of tasks and the ease of obtaining results of the evaluation of tasks, where some methods quickly allow the accomplishment of the evaluations of the tasks. With the 17 methods explained in this research, it was found the three most used evaluations methods: NASA- TLX (Task Load Index), Subjective Fatigue Symptoms Test (SFST) and Fatigue Assessment Scale (FAS) with 9034, 267 and 204 citations respectively.

There are ergonomic evaluation methods that work differently from one another, some work with questionnaires, others with factors captured from observation or measurement of data, all have the goal to make an accurate assessment. Some methods work quickly, and others work slower, as there are some that in the evaluation does not consider more important items. Where a better evaluation is facilitated using physical load factors, mental load factors and other factors like ambient factors, which over time has been validated in different investigations.

According to this, it is recommendable to determine criteria to do a proper evaluation, using and compare the different methods considering the evaluated task and factors available against criteria for suitability and application of different ergonomic methods to do an accurate evaluation.

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Chapter 29
Application of Biomechanics Instrumentation in Occupational Health Research

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ABSTRACT

Occupational morbidities during manual material handling operations are routine at workplaces. This is a global burden contributing substantially to the economy. The multifactorial etiology for musculoskeletal disorders (MSDs) along with workplace stressors require multidisciplinary preventive effort. Biomechanics plays a pivotal role in occupational health research quarrying into the root cause analysis of posture, load handling, muscular loading, balance, and stability at work. Sophisticated instrumentation and experimental techniques assist in understanding the biomechanical mechanisms of MSDs and ergonomic principles, etc. Kinetic, kinematic, isotonic, isokinetic, as well as isometric experimental modes investigate body postures and muscular responses. Foundation of biomechanics instrumentation and injury mechanism would aid researchers alongside ergonomists in dealing with identification, assessment, and control of workplace risks through participatory ergonomics approach. Judicious utilization of this discipline would approach a long-term sustainable solution to protect health and safety of workers at the workplace.

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BACKGROUND

Biomechanics is the study of the mechanics of a living body, especially of the forces exerted by muscles and gravity on skeletal structure. This discipline is most common in sport science, where the laws of mechanics are applied in order to gain a categorical understanding of athletic performance through mathematical modeling, computer simulation and measurement. In this era of advanced research regime, applied subfields of biomechanics including kinesiology, gait analysis, musculoskeletal biomechanics, ergonomics, human factors engineering and occupational biomechanics have been extended beyond sport biomechanics.

Biomechanics is meticulously close to engineering discipline; as often traditional engineering sciences are used to analyze biological systems (Aström & Murray, 2010). In this advanced research arena, biomechanics has turned on the computerization of the technologies. It would be imperative to mention that this discipline incorporates an integrated series of analysis techniques during a single experimental work simulation. Computational biology approaches in biomechanics and biomedical engineering also open up avenues for the importance of integrating the disciplines of engineering with medical technology and clinical expertise. Such integration is ought to have a major impact on health care in the near future. Researchers focus on two general areas of biomechanics- kinematics and kinetics. In kinematics, human motion during an activity is only monitored; while in kinetic studies, motion along with forces and torques involved in the activity is taken in to account.

Occupational biomechanics emerged as a sub-discipline within the general field of biomechanics that studies the physical interactions of workers with their tools, machines, and materials to improve the working condition, enhance worker performance while minimizing the risk of musculoskeletal disorders/injuries (MSDs). Since, occupational health deals with performance of a worker, sustainable livelihood factors such as anthropometric measurements, individual risk factors (age, gender, inherited genetic characteristic), workplace risk factors (methods, materials, machines, environment, and physical stressors), psychological factors, economic concerns and return to work issues are considered during biomechanics study. Occupational biomechanics research thus provides intellectual inputs as a subsidiary discipline during the development of important ergonomics guidelines.

Musculoskeletal Disorders are one of the major causes of variety of morbidity, and have a significant influence on health and quality of life. It imposes an enormous burden of cost on the healthcare system (Jenkins et al., 2016). Especially work-related MSDs are the commonest source of morbidity among workers in range of occupation, resulting in physical impairment and disability to psychological stress. MSD is considered as a primary contributor to the global burden of non-communicable diseases and the reported global prevalence ranges from 14-42% (Sharma, 2012). In the American workplace too, work related musculoskeletal disorders account for one of the largest category of claims in workers' compensation (Bhattacharya, 2014). Studies in various other countries revealed that the prevalence of MSDs in Malaysia (~21%) (Veerapen et al., 2007), Israel (35%) (Sharma, 2012), India (26%) (Yashobant & Rajkumar, 2014) is substantial and alarming. An ICMR Task Force Study in three centres of India reported a prevalence of 7-11.5% (Sharma, 2012), with functional limitation to 85% people with nearly 10% absenteeism.

Given the multifactorial etiology for MSD and its association with individual and workplace risk factors, their reduction and prevention will require a multidisciplinary effort. The science of ergonomics, biomechanics, epidemiology and medicine together better understand the interdependence of MSD, as

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well as long-term sustainable solution. Biomechanical intervention may determine safety or solution to these problems. Most work related injuries can be viewed as biomechanical damage to a tissue or organ.

Thus biomechanical hazards may be single or repetitive movements and forces imposing stress on the body with a potential to cause or contribute to injury or disease affecting the musculoskeletal or neurological systems. To identify these hazards and develop effective control measures, it is important to understand the principles of biomechanics as well as relevant physics, engineering and behavioural science concepts. Biomechanics principle helps in machine control and workplace design in occupational setups. Its fundamental principles explore mechanisms of occupational injuries, its interventions and implementation (Van Der Beek et al., 2017; Herman et al., 2009). Applying biomechanics in various industries and work situations helps in prevention and reduction of musculoskeletal injuries in the workplace.

These disciplines vary largely in their contribution to work-related MSD prevention research, ranging from classic injury surveillance and etiological studies to detailed laboratory studies and animal models exploring injury mechanisms, and studies evaluating

BIOMECHANICS IN OCCUPATIONAL HEALTH RESEARCH

In regards to occupational health research, better posture, optimal load handling, muscular loading, balance and stability gets priority when biomechanics studies are planned. Occupational research laboratories use sophisticated biomedical instrumentation and experimental techniques to understand the biomechanical mechanisms of musculoskeletal disorders, ergonomic principles etc. (Nag et al., 2013, Singh et al., 2015). Such research utilizes force platforms to study ground reaction forces and infrared videography to capture the trajectories of markers attached to the workers' body to study 3D motion. Electromyography (EMG) is further studied to understand the muscle activation. Integrating kinematics, kinetics and EMG techniques during a simulative work experiment makes it feasible to investigate the workers' body movements as well as muscular responses to the external forces, simultaneously (Nag et al., 2013). Therefore, both kinematics and kinetic studies along with EMG become essential in occupational biomechanics.

Gait analysis is the study of human motion, using the eye and the brain of observers, augmented by instrumentation for measuring body movements, body mechanics, and the activity of the muscles. Gait analysis has been found to be an efficient clinical tool used in diagnostics and treatment of pathological gait. It provides an objective and quantifiable assessment before and after intervention that aim to improve a worker's gait ability. Further to understand the kinematics, motion capture system digitally records and analyze the movement of a worker performing a particulate task.

This use of kinetics, however, does not result in information for individual muscles but muscle groups. To detect the activity and contribution of individual muscles to movement, it is necessary to investigate the electrical activity of muscles. It investigates the activation time of muscles and magnitude of their activation-thereby assessing their contribution to gait. Further, in occupational health research., it becomes important to look in the time zone of an activity i.e., intermittent or endurance type of work regime, along with the force required to perform it. There, the EMG assist in understanding the indefatigability of the muscles and henceforth the design of optimal time of work can be suggested to avoid overloading of the muscles. Deviations from normal kinematic, kinetic, or EMG patterns are used to diagnose

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specific postural abnormalities, predict the outcome of investigations, or determine the effectiveness of training programmes.

Further ahead, testing of the maximum allowable human strength (involving a group of muscles) became very essential for designing an equipment, as well as plan a proper work rest schedule. Isometric strength testing in simulative work situation provides the maximum voluntary strength from which limits can be set. In the next stage, improving the performance by training is a most effective tool. Computer-controlled exercise and testing machines are another example of how biomechanics contributes to strength and conditioning. Isokinetic muscle strength exercise, conditions the muscles towards cascade elevation of strength in terms of endurance sustainability.

Many industries nowadays consider poor muscular strength as a potential pre-employment risk factor for workers (Dale et al., 2014). It is strongly felt that quantification of muscular capability can predict susceptibility to many work related disorders. Consequently, health professionals in industries require objective tools to determine whether prospective employees possess the muscular strength necessary to safely meet the demands of the positions at the very pre-employment stage. Muscle strength testing and conditioning provides objective, reproducible measures that can be correlated with the physical demands of different jobs. Such pre-employment testing enables the concerned to assess whether job applicants will become true assets to their workforce or add on to risks of injuries, absenteeism, poor productivity, low morale as well as susceptible to diseases.

FUTURE RESEARCH DIRECTIONS: BIOMECHANICS INSTRUMENTATION

Literature categorically iterates that biomechanical studies complement epidemiological studies to comprehend the complex process between exposures and physical risk factors that result in sprain, strain, injuries or occupational diseases (Keyserling, 2000). Research in biomechanics is dependent on subject knowledge, expertise, instrumentation, data analysis and interpretation. In the recent years, sophisticated instrumentation integrating various dimensions of biomechanics principle has enabled generation of large amount of flawless data. Particularly in occupational health research, the biomechanics studies during actual work activity is grueling. Therefore, classical biomechanics instrumentation assimilating multiple dimensions of movement, balance, muscular activity and strength together gives quality information in less extensive experimentation process during laboratory based simulation studies (Keyserling, 2000; Chao, 2003; Marin et al., 2017). This ultimately assists in excavating out a solution to the occupational problem being researched. Some of the instrumentation are enumerated which caters the research in occupational biomechanics.

Force Platform

Force platforms or force plates are instruments used to measure the ground reaction forces and moments generated by a body while standing, walking, running and jumping. Force plates contribute to research on stability, gait and other parameters of biomechanics. Original workplaces are arduous for measurement of such parameters on sophisticated instrumentation are difficult to be used in such working conditions. Therefore, simulated experimentation especially in occupational health research is the viable option.

It measures the three-dimensional components of the single equivalent force applied to the surface and its point of application, usually called the centre of pressure (CoP), as well as the vertical moment of

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force (Robertson et al., 2004). It helps to demonstrate relationships between force, acceleration, velocity, and displacement. It is used individually or arranged in a walkway format to collect multiple footfalls. A complete standard system typically consists of a force plate, an amplifier, a computer or data acquisition system, mounting hardware, and interconnecting cables. Force plate with sensors attached to it gives an electrical output proportional to the force applied on the plate called piezoelectric phenomenon. Forces that cause human movement normally act on our hands or feet and exert strain on our entire musculoskeletal system. For example, when a worker carries a load on the head in a construction site, he would have to maneuvre his own body weight and balance; in addition to the balance and stability of the load being carried. Simulating such conditions in laboratory using force platform would provide a detailed view of balance and stability during work by measuring ground reaction forces and CoP.

A load on the plate distorts each pedestal, depending on the direction and location of the placement of load on it. A piezoelectric or strain gauze transducer attached to each pedestal measures the occurring distortion. With the known force plate geometry and pedestal locations, the forces and moments acting on the plate are determined. The strain gauges at each corner deform with loading, causing a change in resistance which is measured by the change in voltage over the strain gauge. On contact with the platform, three forces and three moment components are measured. Fx, Fy, and Fz are the force components acting along the axes of an orthogonal x, y & z coordinates (Fx and Fy are horizontal components, and Fz is vertical force component). Mx, My and Mz are the three moment components, which are rotations around the corresponding x, y and z axes.

While simulating a walking or running activity at constant speed, horizontal force is not required. The front foot pushes forward on the ground, resulting in an impulse equal and opposite to the impulse generated when the back foot pushes backwards. While in the standing or stationary holding mode with both feet on a force plate, the vertical direction register $F = Mg$ (where, 'M' is mass of the individual and 'g' is gravitational force). During bending on knees for lifting or lowering of load, the centre of mass is lowered. Initially the force decreases and then increases before settling back to Mg (Wardoyo et al., 2016). However, while in upright standing position the whole body centre of mass continuously moves. But, the CoP underneath the feet is adjusted, maintaining the centre of mass within the feet. Thus, CoP motion plot (stabilogram) is used to assess the performer's standing/ seating balance during work.

Calibration of force platforms is an essential step before the data acquisition. These platforms are usually calibrated by applying a range of pre-quantified static loads that is the sensors are loaded with a range of known calibration weights at specified moment arms. However static loads can be applied only in one direction, which is a disadvantage. This is because actual forces exerted on force platforms are dynamic in nature and actuated multiple directions. Therefore, researchers while using sophisticated instrumentation go for manufacturer supplied calibration parameters to convert the voltages measured by the transducers into force and moment measurements. It is generally recommended to calibrate these instrumentations at least once in a year. However, it may be noted that recalibration intervals for sensors and measurement equipment may vary depending on the specific application and usage.

Motion Capture System

Quantifying human motion during an activity facilitate the understanding of pattern of work profile at workplace, angular deviation of the skeleton structure beyond normal as well as treatment and rehabilitation on injury. Conventionally biomechanical analysis systems used to capture brief snapshots of the mechanics of movement (Winter, 2009). In the recent era, with latest developments in wearable sens-

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ing technologies, biomechanical research has eased out permitting continuous monitoring and analysis (Wong et al., 2015).

Motion capture started as a photogrammetric analysis tool in biomechanics research around five decades back and expanded into education, training, and research as the technology advanced. Since the 20th century, with newer technology, the performer is worn markers near each joint to identify the motion by the positions or angles between the markers. Acoustic, inertial, LED, magnetic or reflective markers, or combinations of these, are tracked, optimally at least twice the frequency rate of the desired motion. The spatial resolution and temporal resolution is considered typically, as motion blur causes almost the same problems as low resolution. Modern systems extract the silhouette of the performer from the infrared motion camera images. Requisite joint angles are then calculated by fitting in a mathematic model into the silhouette.

Motion capture technology consists of motion capture cameras, other hardware and software. It is used in occupational health research to identify and prevent injuries, improve performance as well as aid ergonomists to build better products and increase production efficiency.

There are various types of motion capture systems:

1. **Optical-Passive:** Retroreflective markers tracked by infrared cameras.
2. **Optical-Active:** LED markers connected by wires to the motion capture suit with a battery or charger pack worn by the performer.
3. **Video/Markerless:** Markers are not required to be worn and instead relies on software to track the performers' movement.
4. **Inertial:** Cameras are not required except as a localization tool. Inertial sensors are worn on the performer's body at selective locations and the data from the sensors is transmitted wirelessly to a computer.

Data acquisition is performed by an infrared optoelectronic system and the analysis is based on the detection and three-dimensional construction of the silhouette from passive markers positioned on anatomical landmarks of the body. The labelling of the markers attached to the defined locations of the body is very important for identification of the correct two-point angular deviation within the software. These softwares generally carry out data acquisition and further elaboration of the trial, as well as interpretation of data in fidelity with conventional protocols like Davis protocol, SAFLo protocol etc. (Ferrari et al., 2008). Therefore, when an experiment is designed on the conventional protocols registered within the software, exact anatomical locations on three-dimensional coordinates needs to be recognized and linked to the corresponding real point on the performer. However, self-made protocols can also be used for the elaboration of a simulated work profile and interpreted.

Having said that any postural activity can be simulated, the precision and repeatability of data is dependent on the system calibration. Different systems have distinctive process of calibration. In general, these systems come with active wand, that calibrates both optical and video cameras while accounting for sensor edge distortion at the same time, to ensure synchronized overlay across entire volume. Calibration is performed using a rigid wand on which three markers are mounted and is swept through the volume of interest, in a dynamic acquisition, for simultaneous calibration of intrinsic parameters, and relative position, of the video cameras. Within the experimental overlay, the global frame of reference is determined by a three-axes calibration grid, placed on the ground.

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Electromyography (EMG)

EMG is a technique of recording the electrical activity produced by skeletal muscles performed using an instrument called an electromyography to produce a record called an electromyogram. An electromyograph detects the electric potential generated by muscle cells when these cells are electrically or neurologically activated. EMG sensors and systems have been extensively researched and developed over a number of years incorporating the latest design principles and technologies for movement analysis and biofeedback. Understanding the electrical activity of the muscles provides a categorical view of the muscular overloading, limits of load, performers' capacity and sustainability and most importantly the indefatigability of the muscles leading to peripheral or central fatigue (Cifrek et al., 2009). This technology in addition to medical perspective is used in symmetry studies during gait, timing data in biomechanics, work profiling and fatigue, work environment and tool design, work performance and productivity oriented protocol as well as precisely in rehabilitation schema.

Electrical Characteristics of Muscles

When a muscle contracts, electrical activity is generated within the muscle which may be measured using electrodes placed on the surface of the skin. This electrical signal is usually in the order of up to 3,000 micro volts. Measured EMG potentials range between less than 50 μV and up to 20 to 30 mV, depending on the muscle under observation (Phinyomark et al., 2011).

Typical repetition rate of muscle motor unit firing is about 7-20 Hz, depending on the size of the muscle, previous axonal damage and other factors (Lee & Lee, 2008). Damage to motor units can be expected at ranges between 450 and 780 mV. EMG activity is linearly related to the amount of muscle contraction as well as the number of contracted muscles. This implies that stronger the muscle contraction and greater the number of activated muscles, the higher the recorded voltage amplitude.

Intramuscular and Surface EMG

Electromyography of specified muscle can be done in two ways: intramuscular and surface. Intramuscular EMG is a superior technique for the diagnostic examination of voluntary motor activity of the deeper muscles. This technique also comprehends the needle insertional activity. However, this technique is painful, the muscle may feel a little sore up for some post examination days. Depending on the purpose of experimentation particularly in case of measurement of electrical activity of a muscle during a simulative work process, surface EMG is a versatile, state of the art beneficial technique, which is reliable, accurate and easy to use. Its painless, non-invasive and can collect quality signals if the skin surface is prepared well. Therefore, especially for the occupational health research, where workers' posture remains dynamic, surface EMG is a judicious option to collect electrical signal for analysis. Surface EMG can be recorded by a pair of electrodes. More than one electrode is needed because EMG recordings display the potential difference (voltage difference) between two separate electrodes.

Placement of EMG electrodes over muscle groups of interest require a substantial level of anatomic knowledge to be able to get valid and reliable signals of high quality. EMG signal is collected in a bipolar technique i.e., the voltage difference between recording site and reference site. The EMG reference channels is placed on the bony body parts such as metacarpal, elbow, hip or collar bones. The shorter the size of connecting cables, lesser the electrical noise picked up from surrounding power sources.

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Maximal Voluntary Contraction

One basic function of EMG is to see how well a muscle can be activated. The most common way that can be determined is by performing a maximal voluntary contraction (MVC) of the muscle that is being tested (Castelein et al., 2015). Several analytical methods for determining muscle activation are commonly used depending on the application. Most studies commonly use the maximal voluntary contraction as a means of analyzing peak force and force generated by target muscles. Researchers suggest that EMG data should be recorded alongside the peak EMG measure when assessing core exercises (Hibbs et al., 2011).

As said earlier, EMG can also be used for indicating the amount of fatigue in a muscle. In such cases, changes in the EMG signal is witnessed which signifies muscle fatigue like, an increase in the mean absolute value of the signal, increase in the amplitude and duration of the muscle action potential and an overall shift to lower frequencies. Monitoring the variability during different frequency changes is the most common way of using EMG to determine levels of fatigue. The lower conduction velocities enable the slower motor neurons to remain active (Cifrek et al., 2009).

EMG Signal Processing

Rectification is the translation of the raw EMG signal to a single polarity frequency. The purpose of rectifying a signal is to ensure the raw signal does not average zero. Half-length rectification deletes the EMG signal below the baseline. In doing so, the average of the data is no longer zero therefore it can be used in statistical analyses. The only difference between the two types of rectification is that full-wave rectification takes the absolute value of the signal array of data points.

It is imperative to note that occupational circumstances at workplace would be typically dynamic in nature. The movement, speed and angle of physical body deviation would resist accumulation of quality EMG data. Therefore, a portable instrument for any simulated laboratory experiment would be most effective for occupational health research. Further portable EMG machine synchronized with wireless position measurement systems to accurately study the amount of muscle activation for different activities such as lifting the arm up or during gait, would be the ideal one. Generally, the new generation devices include powerful software for the elaboration protocol creation by means of an innovative object interface that convert the biomechanics analysis language in a graphical way. In these systems, the user can develop quick and efficient customized analysis protocols. The real time data transmission between the system and the workstation occurs with Wi-Fi net using an access point. The software facilitates acquisition, display, processing, and reporting of electromyographic signals.

Mechanomyography (MMG)

In addition to the general technique of recording of electrical activity of muscles using EMG, the MMG is also used as an alternative to the EMG for monitoring the muscular activity. It is said to produce higher signal-to-noise ratio than the surface EMG and thus can be used to monitor muscle activity from deeper muscles without using invasive measurement techniques. It is a promising research area into prosthetic research and assistive technologies. The mechanomyogram is the mechanical signal from the surface of a muscle, on contraction, wherein the muscle shape causes a large peak in the MMG.

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INTEGRATING MULTIPLE DIMENSIONS OF BIOMECHANICS

For the workers, posture at work, workplace design constraints and housekeeping management are important domain at workplace. Biomechanics tools aid in workplace design research, ensuring the safety at workplace as well as optimal posture of the worker for productivity at endurance. The measurements for the above three instrumentation systems (force platform, motion capture and EMG) can be either studied in isolation, or combined kinetic and/or kinematics to understand the principles of locomotion. If a worker makes a standing jump from a force plate, the data from the plate alone is sufficient to calculate acceleration, work and power output. Simultaneous video measurements of leg joint angles and force plate output can allow the determination of torque, work and power at each joint using a method called inverse dynamics. It also allows to perform advanced elaboration of the EMG signals, allowing to state for the muscular exertion as well as muscle fatigue. A customized analysis protocols integrating these dimensions would be a comprehensive advanced multimodal report.

ISOKINETIC SYSTEM

Another important facet of biomechanics study is the human strength quantification particularly for a group of muscles. This has a tremendous impact in the occupational health research in pre-employment screening, physical load handling limits, manual material handling, work rest schedule as well as safe work protocol for injury prevention. Research on human strength is done on three modes: isokinetic, isotonic and isometric mode.

Isokinetic Mode

The maximum dynamic capability throughout the range-of-motion is determined. It is an effective mode to comprehend the localization of pain, weakness and determine the dynamic physical capacity. It is also the most efficient method to improve strength, power in endurance as well as rehabilitation after an injury. The focal point for the experimentation is the dynamometer which functions on eccentric-concentric mode. Hence depending on the size (length) of the attachment/lever the resultant is quantified in torque (Nm).

Isotonic Mode

This mode is used to facilitate neuromuscular coupling improvement with functional isotonic concentric/eccentric resistance coupled with user defined velocity. During concentric contraction, the muscle tension is enhanced due to increment in resistance and remain the same with shortening of muscle. In eccentric mode, the muscle lengthens on account of grater resistance than the force generated by the muscle.

Isometric Mode

This mode of experimentation is typically used for quantification of maximum strength during a voluntary muscular exertion. While the dynamic mode sets the requisite motion for optimal strength and rehabilitation, isometric mode is a static function restricting the length of the muscle to be altered. Apparently the desirable posture during an activity is taken and the subject applies his/her maximum strength on

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the lever, precisely exerting the maximum voluntary contraction. The universally accepted protocol for short duration or intermittent experimentation is 5 second wherein 2 second is for strength build up and 3 second for retaining the maximum strength (Tiwari et al., 2010). For endurance exercise, 1 minute tests are applied; peak strength time, decremental plateau and sustainability of strength is noted.

Load cells of tension-tension type, tension-compression type are used. With the technological advancement, integrated instrumentation with the ability to experiment strength in isokinetic, isotonic and isometric mode are available. One such laboratory based integrated system is Humac Norm Testing and Rehabilitation system to cater the comprehensive experimentation of human strength at workplace.

CASE STUDY-I

A study was carried out to comprehend the balance and stability among young male workers while performing manual materials handling tasks. The excerpts from the study is presented below as a case study involving the principles and instrumentation in biomechanics.

Manual load handling continues to be a concern in everyday activities, particularly in the occupational set ups (Nag et al., 2014). Loss of balance associated with different forms of manual materials handling (MMH) tasks is a crucial factor causing workplace accident and injury. MMH tasks include the lifting, lowering, pushing, pulling, carrying, twisting and turning of materials (Kotadiya et al., 2013). Construction workers, food grain handlers, agricultural workers and labourers in manufacturing industries have frequently been engaged in lifting and other forms of MMH tasks (Deros et al. 2010; Maiti, 2008). With the premise that MMH tasks have potential consequences on postural balance and stability, there is a need to consider the effects of load positioning and magnitude on stability.

Postural control requires the ability for balancing the body in space through the visual, vestibular, and somatosensory systems and makes an appropriate musculoskeletal response to perturbations (Nashner, 2014; Paillard, 2012). The maintenance of an upright posture is a vital motor function and postural control is essential for the maintenance of posture and task performance (Ku et al., 2012). In humans, when the centre of gravity falls outside the base of support, the body has the ability to sense a threat to stability and in such instances, relevant muscles are activated to prevent falling (Ritzmann et al., 2017). Postural control strategies used are dependent on the assessment and control of many variables by the CNS. The strategies used to maintain balance differ according to an individual's goal, the environmental context and the task performed (Horak et al., 2008). Thus identifying a method of load handling which is relatively more stable can prevent falls and injury risks. Changes in postural responses can be identified through the use of EMG by measuring onset latencies, response amplitudes or postural strategies (Visser et al., 2008). Muscle fatigue affects postural control by increasing postural sway (Mello et al., 2007). Thus postural imbalance can be indicated through study of centre of pressure and electromyographic measurements. The simulated laboratory study was carried out with the hypothesis that muscle activity and centre of pressure displacements may be influenced by the changes in methods of MMH tasks and increase in grades of load.

The experimental set up included two large format multi-component piezoelectric force platforms (Kistler, USA) for measuring the ground reaction forces and 16-channel portable and Wi-Fi enabled pocket EMG machine (BTS Bioengineering, Italy) to measure muscular activities during MMH task. The electromyographic recording of neck, shoulder, spinal and leg muscles were examined. Primary MMH tasks viz. lifting-lowering, twisting-turning and holding activities were simulated. The simulated

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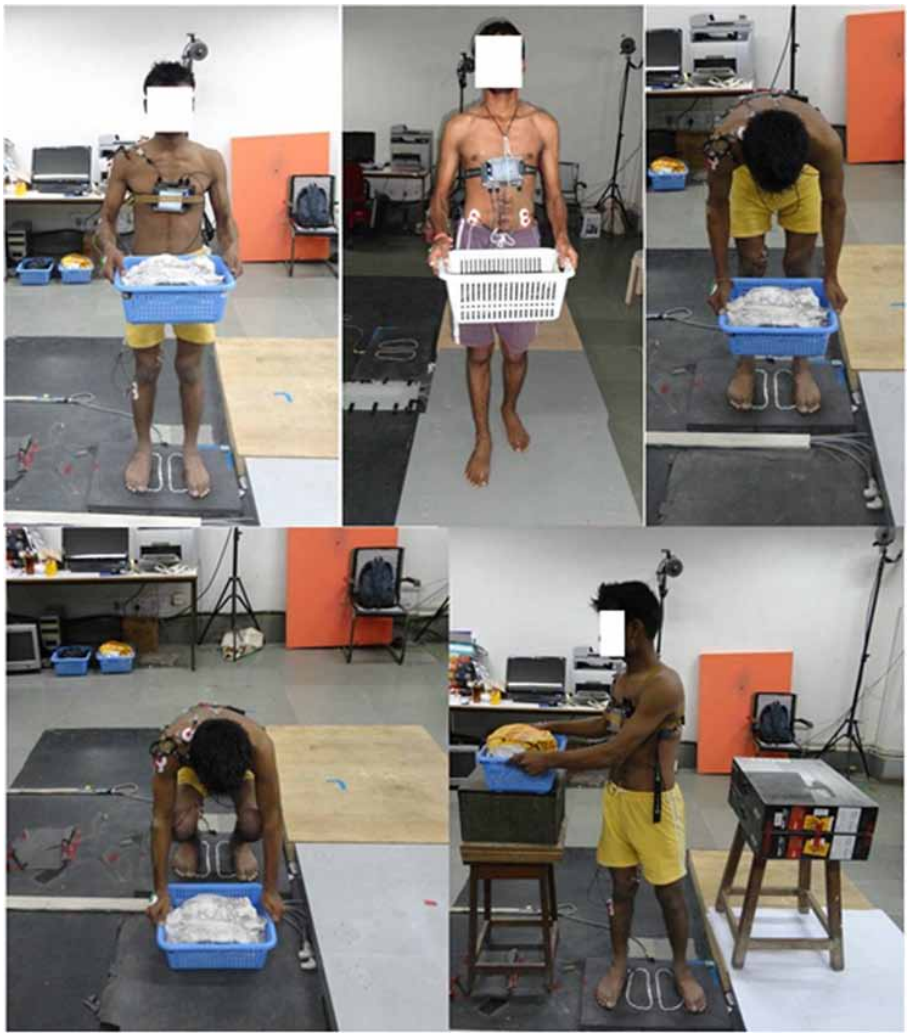
activities with the equipment set up are shown in Figure 1. The sEMG signals of muscles were captured by SMART capture software (BTS Bioengineering, Italy) and analyzed off-line using MYOLAB software (BTS Bioengineering, Italy) Piezoelectric force platform was used for measurement of three forces along the three orthogonal axes (F_x, F_y, and F_z) and three moments around the three axes — M_x, M_y, and M_z, thus ascertaining centre of pressure displacement parameters such as mediolateral CoP (ML CoP), anterio-posterior CoP (AP CoP), radius of the stabilogram and speed of CoP displacement. Postural stability effects were evaluated using SWAY software.

In a designed research protocol, static loads of three different grades (4 kg, 8 kg and 12 kg) were lifted and lowered by the volunteers as a combined activity from ground to knee, waist and chest height at each three grades of load. The twisting-turning and holding activity was performed at iliocristale height. Both lifting-lowering and twisting-turning MMH task were performed for each three grades of load at standard frequency for continuous 10 min of sEMG recording. Holding activity was monitored while performing to hold each particular load for maximum voluntary duration.

Figure 1. A volunteer performing MMH tasks on force platform during simulated experimentation set up



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Results revealed that the RMS values of muscles increased with increase in load from 4 to 8 to 12 kg. However, the trend was insignificant may be due to rest pause given between each trail. When the load was increased to thrice of the initial value (4 kg to 12 kg) significant influence was found on upper extremity muscles. Similar trend was not observed when load increased to twice of the initial value. Study also explained that increase in level (height) of handling the load from knee to waist to chest for each three grades of load, the RMS values of deltoid, rectus femoris and semitendinosus hamstring muscle also increased.

It was noted that median frequency (MDF) values significantly dropped as load level increased. Further, increase in load holding time demonstrated in decreased MDF values of the muscles. The decreasing trend of MDF values starts earlier with higher magnitude load as compared to lower one indicates muscles became fatigued earlier with higher grade of load suggesting any MMH holding activity in endurance would manifest in fatiguing nature of muscles. The response pattern showed that overloading of muscles leading to fatigue and/or injuries can be avoided by selection of appropriate magnitude of load with rest pause i.e. ergonomically designed work-rest schedule.

Interaction of multiple conditions and type of task performed has significant influence on stabilometric parameters included in the study. ML CoP and AP CoP have significant influences on all the MMH tasks with each three grades of load. The relative displacement of CoP was found higher in anterio-posterior direction as compared to medio-lateral direction during all MMH tasks. Carrying and holding tasks did not influence the CoP displacement parameters significantly. Twisting-turning task because of its nature of movement significantly influenced the anterio-posterior CoP displacement. Conversely, as lifting has been done from the forward direction, it significantly influenced the medio-lateral displacement of CoP. As both the MMH task influenced stabilometric parameters in characteristic manner, it indicated relative postural instability during MMH activities.

The study summarized that any MMH activity that involves frequent manipulation of load combined with change of handling level in endurance would manifest in the fatiguing nature of muscles and ultimately result in possibility of injuries. However, proper rest pause between work bouts would alleviate the possibility of injuries to some extent as well as enhance work performance. MMH tasks are also influenced the stabilometric parameters in characteristic manner, indicating relative postural instability during MMH activities. The incorporation of ergonomic principles of work-rest schedule design and limits of safe handling of weights would save the workers in long run.

CASE STUDY-II

Another study was carried out to quantify the human hand finger grasping and force exertion while doing manual drilling and screw-driving activities. The excerpts from the study is presented below as a case.

Forceful grasping, force exertion and prolonged activities, in combination, are common in day-to-day work life. Determination of hand-arm-shoulder force would elucidate the muscular capabilities of workers as well as provide an acceptable limit of operational force, restricting fatigue and consecutive injury at workplaces. Compared to hand-operated controls fixed in a static/dynamic machine, tools with one handle e.g., screw-drivers, drills etc. are usually held and moved in a power grip, requiring more of hand and shoulder muscle movement and less finger muscle movement/motion. In addition, wide-ranging straight translation motions and rotational motions are executed by hand-arm-shoulder system with less precision, but more force (Strasser, 2007). The determination of human strength capabilities

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is an important consideration in the development of ergonomic guidelines for pre-employment screening of workers performing manual materials handling jobs (NIOSH, 1981). Hand grip torque for the preferred hand in isometric mode among Indian agricultural workers varied between 2-19 Nm (Gite et al. 2009). Depending on the intensity and repetitiveness of the operation, the acceptable limit of force varies providing a safe force limit, restricting fatigue at workplace.

A test setup of screw-drivers and drilling equipment were fabricated and attached with CSMI Humac Norm Isokinetic and rehabilitation system as shown in Figure 2. Two screw-driver handles of dimensions (10 cm X 12 cm; 8 cm X 10 cm) & one drill handle with handgrip breadth 110 mm is fabricated and considered for the study.

Figure 2. A test setup of screw-driver attached with dynamometer of HUMAC Norm System during laboratory experimentation

Isometric strength testing of the preferred hand in concentric as well as eccentric movement is being recorded at 0 Nm torque and ($+35^0$) (-25^0) virtual range of motion. Isokinetic strength testing is being carried out at 500 Nm torque and ($+35^0$) (-25^0) actual range of motion. Volunteers were tested for isometric, isokinetic exercises for short duration (7 Sec) as well as long duration (60 Sec) maximum voluntary force exertion. Physical assessment of muscular strength in both isometric and isokinetic modes provide the maximum capability of the muscles at work.

For isometric pulling and pushing operation, the torque generated depreciated with time. Further, torque generated by the volunteers in pulling operation was found higher (24.3 ± 1.4 Nm) than that in the pushing mode (20.7 ± 1.3 Nm), length of the lever being 0.3 m. This may be due to the distribution of the force in horizontal plane as well as on the direction of gravity during pushing mode (Figure 3).

Comparison with short and long duration experimentation show that the torque generated and held in pulling mode in 7 second experimentation was higher (18.2%) than in 60 second experimentation. For isometric experimentation with screw-drivers (8X10 cm and 10X12 cm grip), the strength generated by 8X10 cm grip is less than that of the 10X12 cm grip. Also, the strength depreciated with time for both the two prototypes (Figure 4).

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Figure 3. Pulling and pushing action during simulated drilling in three trials

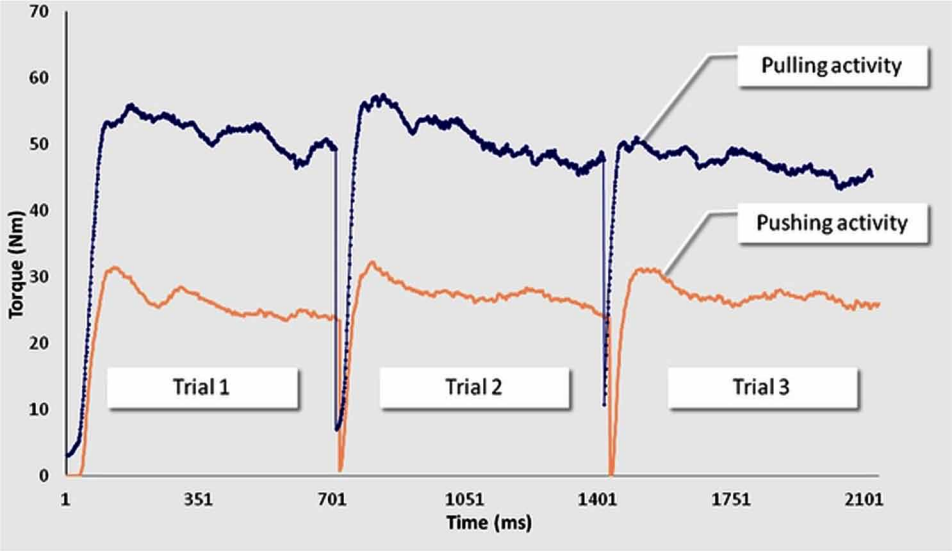
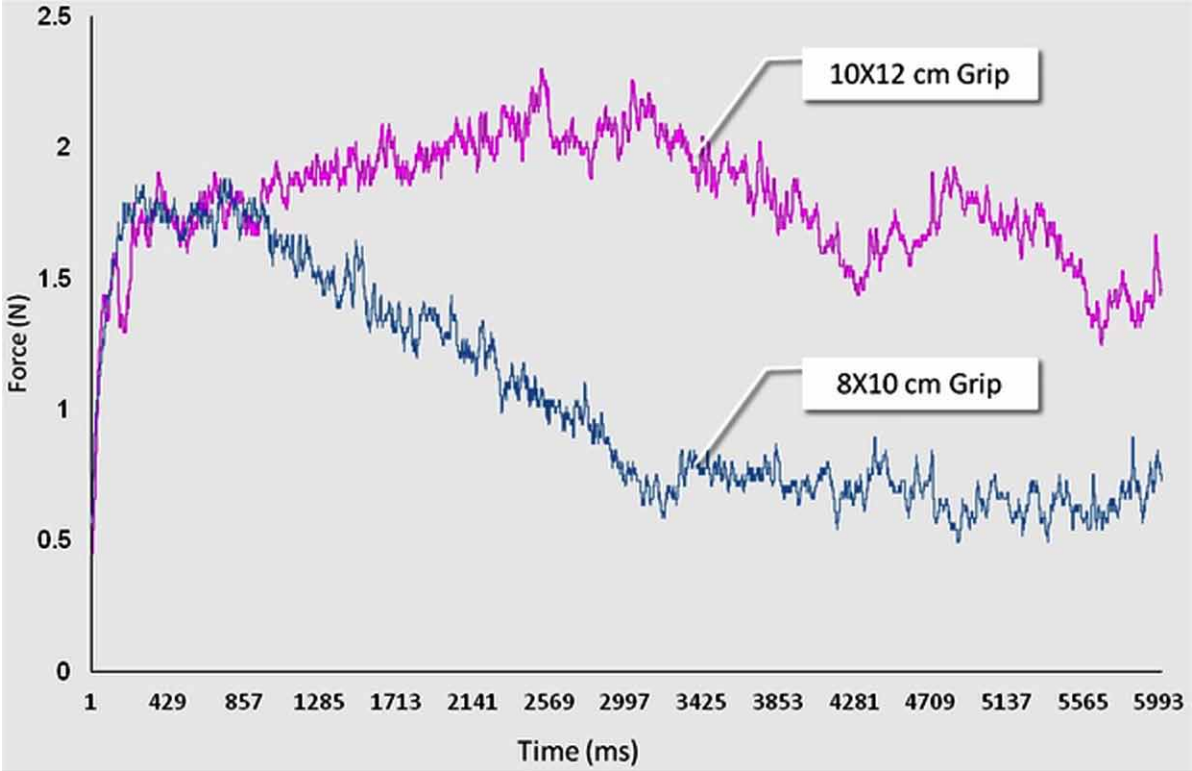


Figure 4. Concentric torque generated by two different screwdriver grips



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Such study determines the hand-arm-shoulder force elucidating the muscular capabilities of workers. It is an important consideration in the development of ergonomic guidelines for pre-employment screening of workers performing manual materials handling jobs as well as provide an acceptable limit of operational force, restricting fatigue and consecutive injury at workplaces.

CONCLUSION

Confiscating the occupational health hazards at workplace is impossible in entirety, rather can be controlled. Engineering and administrative controls can substantively counter the probability of inadvertent incidents at workplace. However, the human component particularly the load limits, posture, duration of work i.e., the physical stress in causation of injuries, loss of productivity, absenteeism can be taken care of by biomechanics principles in close association with ergonomic inputs. This chapter has attempted to provide an overview of biomechanical hazards at workplace, with a focus on biomechanics instrumentation. In addressing the issues. Instrumentation in this field are complex, and need knowledge and expertise to gather data, analyze and interpret the results. Biomechanics research can aid in determining the cause of injury, helps to prevent future injuries by determining the safest method for performing a particular task. The goal towards increasing the productivity and decreasing the probability of accidents/injuries through judicious utilization of human resources can be achieved. Deep understanding of biomechanics can play a leading role in the design of work and workplaces that are injury free.

Having said that, acquiring the basic knowledge of biomechanics and mechanism of injury, occupational health professionals in combination with ergonomists can address the identification, assessment, evaluation and control of risks associated with manual efforts at workplaces. Participatory ergonomics can be helpful to develop and evaluate effective control measures in complex vulnerable situations at the work front.

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Chapter 30
Exceeding the Recommended Energy Limits Due to Age and Gender in Occupational Aerobic Workloads

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ABSTRACT

The purpose of this chapter is to analyze the physical aerobic work in terms of the metabolic expenditure and compare it with the recommended boundaries of energy found in literature, proposing an alternative to the potential work overload through a compensatory equation introduced in the standard time of the workstation. To support the study, information considering the estimated metabolic expenditure in workers was applied to a novel procedure to reduce the metabolic demand of the task according to age and gender. Results of the study indicated that women older than 30 years exceeded the energy limits from moderate to very heavy load activities, and men older than 40 years exceeded the energy limits in heavy and very heavy workloads. The proposal of compensatory equation statistically reduced the energy loads below the recommended limits of energy. The aerobic workload is a sensitive factor for age and gender groups and can be potential risks for developing cardiovascular diseases as well as some musculoskeletal disorders.

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INTRODUCTION

Accurate methods are required to measure and control the efficiency of the industrial processes. Time and motion studies (TMS) provide the necessary information to establish proper time standards and obtain balanced workloads that allow workers to reach production rates. Because of the importance of the manufacturing companies to maintain appropriate productivity levels, standard time (ST) is considered as a key activity to control most of the production processes through the calculation of the work rate. In this respect, an increased work rate can expose operators to an elevated risk of musculoskeletal injury (Gooyers & Stevenson, 2012), and considering the aerobic physical capacity, ST might be inappropriate if it is performed by individuals who do not reach this capacity just because the age, gender or combination of both (Balderrama, Flores, & Maldonado, 2015).

Even though there is a fact of a significant difference to produce energy on individuals, just few evidence to consider age and gender was found in the calculation of predetermined times or some other systems used to determine the ST; Murrel (1965) proposed a fixed relationship to compute rest time considering an energy expenditure of 5 kcal/min for males and a 4.2 kcal/min for females no matter the age of the workers, and Mital and Shell (1984) proposed the use of an energy model to predict rest period as a percentage of working duration to compensate physiological fatigue, but without stablish the application of the rest. Regarding rest pauses and line balancing, some intents to consider individual energy production have been experimented; Ayabar, De la Riva, Sanchez & Balderrama (2015), developed a model to estimate de energy consumption trough heart rate using linear regression and determine ST in moderate workload stations. Unfortunately, the study did not consider age and gender in the calculations.

It is important to remark that gender differences are significant in physiological work; in a longitudinal study during 5 years taking indices of work content, health, work ability, functional capacity, and symptoms of stress in 129 employees, women showed less physically able as men for physical work (due for reasons as the musculoskeletal capacity), and the critical age for women in prolonged physical work resulted in less than 50 years (Ilmarinen, 1988). Job demands could be significate in relation with older employees; lower autonomy and higher job demands increased the association of an array of common chronic health problems with sickness absence. These results were obtained taking in consideration work factors, health and sickness absence, and relative excess risk on 8,984 employees (Leijten, Van den Heuvel, Ybema, Robroek, & Burdorf, 2013). Likewise, a study performed in 2007 with 4 year, and 11 year examinations of 612 men using ultrasonography and the association between five measures of energy expenditure, concluded that high energy expenditures at work are associated with an accelerated progression of atherosclerosis even after controlling virtually all known cardiovascular risk factors, especially among older workers and workers with preexisting ischemic heart disease or carotid artery stenosis (Krause, Brand, Kaplan, Kauhanen, Malla, & Tuomainen, 2007). Workloads are then, an important part in the physical development of the worker; a 16-year follow-up study based on assessments of musculoskeletal and cardiovascular load, resulted in the following conclusión: In general, and contrary to what one might think, aging workers with low workload had better physical capacity than the subjects with high workload (Savinainen, Nygård & Ilmarinen, 2004).

With age, some physiological factors tend to change, for example, a research considering 120 men aged from 23 to 60 years old observed in six different type of work, found that the variation in the relative aerobic strain (RAS) is shown to increase in work tasks and is demonstrated that this increment is mainly related to physical work and the exposure of workers to peak loads (Ilmarinen & Rutenfranz,

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1980). These variations can include the production of muscle forces and the coordination of motor functions (Ilmarinen, 1984). The emerge of fatigue is one important reason for decreasing performance (Öztürkoğlu & Bulfin, 2012). In our experience, consequences of physical fatigue caused by high workloads can be associated with execution mistakes that will end in generation of scrap, repairs, idle time, process delays, and other manufacturing costs related to the personal performance. Also, a decrease in the efficiency and the product quality may appear at a short or long term.

Taking into consideration the metabolic rate needed to perform a job, an experiment is presented to investigate the industrial workloads performed by people of age and gender and compare them with the recommended energy limits at work extracted from literature. In addition, a time allowance equation is proposed in order to reduce the energy consumption in the participants; the equation (explained in section of: Time Allowance Equation) includes nine physiological factors and is introduced directly into the calculation of the ST.

Aging and Work

It is a noteworthy finding in the literature review that there is a decrease over the years to produce energy, as well as there is a difference between men and women in the capacity to consume (O2). For example, on an average, the physical working capacity of women is about 30% less than men of the same age (Astrand & Astrand, 1978). The decline in physical working capacity from the age of 20 to 65 years is about 30%, calculated in terms of mean value. This mean value for a 65-year-old man is of the same magnitude as the value for a 20-year-old woman (Astrand, 1988). Considered to compute physical shape and an accurate tool according to ISO 8996 (±5%), the VO2max (Maximal Oxygen Consumption) decline begins after reaching the maturity age, at least after 30 years of age (Shvartz & Reibold, 1990). Nevertheless, females often dominate jobs where major physical risk factors such as repetitive work, forceful exertions, static work, and awkward postures prevail (Collins & O'Sullivan, 2010).

Shephard (2000) findings, are specific in terms that "aging is associated with progressive decreases in aerobic power, thermoregulation, reaction speed, and acuity of the special senses. These changes can reduce productivity, particularly in self-paced activities where the physical or mental input of the individual worker is the rate-limiting step in production" (Shephard, 2000).

Many years ago, an energy consumption of 5.33 kcal/min for men and 4 kcal/min for women was suggested as a limit for 8 h shift. This represents one third of average consumption in the United States (Bink, 1962) and is still in use to determine energy loads and rest pauses (Bridger, 2003; Groover, 2007; Niebel & Freivalds, 2003). A workload of 5.33 kcal/min generates an increase in the heart rate (HR) of 40 beats/min (Grandjean, 1988). Other studies have recommended that the requirement for a physical activity should be between 30 (no rest available) and 50% (rest available) of the maximum capacity of the worker (Ilmarinen, 1984; Bridger, 2003; Astrand, 1956; Jorgensen, 1985; Rutenfranz, Ilmarinen, Klimmer, & Kylian, 1990).

Half of the aerobic capacity cannot be surpassed because when a demand of energy is involved, it is necessary to design tasks below its consumption level (Farrer, Minaya, Niño & Ruiz, 1997). At intensities exceeding 50%, carbohydrate metabolism increases and therefore, the degree of exertion gradually increases, HR and pulmonary ventilation per liter of oxygen uptake increases, and body temperature rises above 38 °C (Astrand, 1988).

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Taking in consideration the information reviewed, is important to define that if there is a significant difference in energy production between women and men as well as a difference in workers of different ages, then an adult woman should not perform a task with aerobic load for the same amount of time than a young man.

Determine the Metabolic Rate in Tasks

There are different methods used to estimate the energy consumption at work. Direct calorimetry is the most accurate method with minimal error but is often expensive and difficult to be used in the field. Similarly, doubly labeled water is accurate and expensive and is applicable for measuring energy consumption over long periods of time. The most recognized and accurate indirect measurement method is through reading VO2. For the ISO 8996 (2004), VO2 measurement is accurate to ±5%, while the methods based on tables, HR, and classifications are accurate to ±15%. The Firstbeat's beat-by-beat method uses the HR also and reports better accuracy against other methods (Firstbeat Technologies, 2017).

By monitoring the HR, we can approximate the metabolic level of a person when executing a task. Taking into consideration the HR in basal state, it can be subtracted from the HR when an aerobic task is performed. VO2 has a lineal relation with HR when an aerobic task is carried out (Groover, 2007; Astrand, 1960; Ilmarinen, 1992; Manero & Manero, 1991; Smolander, Juuti, Kinnunen, Laine, Louhevaara & Männikkö, 2008). HR is acceptable as an estimator of VO2 only when the test work closely resembles the muscle work in the job (Oja, Ilmarinen, & Louhevaara, 1982), and is a good predictor when heat stress is present (Imbeau, Desjardins, Dessureault, Riel & Fraser, 1995). Bouchard and Trudeau suggest good reliability of the VO2/HR relationship at HR usually found in workplaces, regardless of the time of day, is not affected by a day at work in both genders (Bouchard & Trudeau, 2007).

Balderrama et al. (2010) evaluated an electronic HR monitor equipment to estimate oxygen consumption in aerobic activities. The HR monitor records every second and computes the VO2 through neural nets. The software uses a model developed by the company called Firstbeat Technologies (2017). A validation was performed by means of a comparison between a direct measurement equipment of VO2 and monitoring equipment of brand Sunnto resulting in no significant differences using a 95% of confidence level.

In order to determine how demanding is a work task in terms of VO2, there is a general classification presented by Astrand and Rodah (1977), where a workload is considered as a light load when VO2 is between 0 and 0.5 l/min (0–2.5 kcal/min), a moderate workload is considered from 0.5 to 1.0 l/min (2.5–5.0 kcal/min), a heavy work is considered from 1.0 to 1.5 l/min (5.0–7.5 kcal/min), a very heavy work is considered from 1.5 to 2.0 l/min (7.5–10.0 kcal/min), and an extremely heavy work is considered from more than 2.0 l/min (>10.0 kcal/min).

Work Rate

In industry, it is common knowledge that work rate is an important measurement of labor because the number of parts produced per hour or per day is one way to control the intensity of work. Companies use this rate to program their production volumes and determine its maximum capacity in relation to the number of workers and equipment available. ST is used as the basis for estimating work rate and is composed by the normal time and a group of allowances applied according to the work conditions. The normal time is the average time to perform a work task that can be determined by stopwatch, statistical

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data, video analysis, or predetermined motion time systems. Normally, it is determined from the measure of average skilled operators. In any case, the obtained time represents a mean time of the cycle time without taking worker's age and gender into consideration.

Allowances adding to the normal time are for personal needs (such as washroom and coffee breaks), unavoidable work delays (such as equipment breakdown or lack of materials), and worker fatigue (physical or mental) (Niebel & Freivals, 1998). In some cases, different compensations are added to the normal time of the job that help to reach the estimated time when factors do not allow to carry out the task in the calculated time (Meyer, 1991). Predetermined motion time systems are not suitable for aging workers and middle age and old woman can have problems to reach the ST in terms of energy consumption (Balderrama, Flores, & Maldonado, 2015).

Several factors can be utilized to establish allowances due to fatigue; according to the International Labor Organization (Kanawaty, 1992), the physiological factors are weight, force or pressure, posture, and restrictive clothing. The psychological factors such as discipline, concentration, mental and visual demands, and monotony can also be taken into consideration. Also, thermal and atmospheric factors of the environment such as temperature, humidity, wind conditions, noise, vibration, light, and visual factors are aspects that affect the personal performance when they are out of the comfort limits, which are considered as significant, in order to add extra concession to the normal time of the job. Unfortunately, there are no records or investigations that consider the age and gender differences as a required element within the ST.

METHODS

Subjects

Five companies dedicated to manufacture auto parts were visited, where a total of 149 workers gave authorization to collect data during 8 months of work in accordance with the institutional occupational standards. Their ages fluctuated between 20 and 68 years and were categorized in five different age ranges. Workloads as moderate, heavy, and very heavy tasks were considered according to Astrand and Rodah (section of: Determine Metabolic rate in Tasks). Considering a previous laboratory study (Balderrama, Flores, & Maldonado, 2015) about energy consumption, light tasks were not considered because they didn't affect any age group. A summary of the participants' data is presented in Table 1. Mean and standard deviation is presented considering five age groups to include 149 participants. 59 men and 90 women with a mean of 53.42 and 43.91 years old respectively. VO2 on rest as well VO2 MAX looked very similar comparing average measures for both genders. Due to some activities are time consuming and interfere with production purposes, rest VO2 was computed by equations according to age and gender (Kanawaty, 1992) and VO2max was taken from local tables (Sandoval & Ramos, 1995).

Instruments

Considering that VO2 is one of the most accurate methods to measure the capacity to generate body energy and the need to operate noninvasive equipment to workers, this study use an estimation of VO2 by means of HR using the Firstbeat technology (2017) as a new HR variability-based method for the estimation of oxygen consumption without individual laboratory calibration; it was examined as a good

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estimator in Smolander et al. (2008), Balderrama et al. (2010), and Uusitalo (2011). This equipment was utilized to obtain VO2 on field and compute time allowances by means equation 1 described in the next section. Also, a Sunnto Team Pod© with chest straps and Sunnto Monitor© software were used to monitor HR and calculate VO2.

Table 1. Participants' data

Age Range	Gender	Number of Participants	Age (Avg)		Weight (Avg)	Height (Avg)	Rest VO2 ml/kg/min	VO2 Max ml/ kg/min
20-29	Men Woman	12 31		26.40 25.31	73.00 66.74	170.92 157.14	3.68 3.89	38.90 35.76
	Σ	43	Mean S.D.	25.60 2.68	68.34 12.75	160.66 8.94	3.84 0.34	37.30 6.60
30-39	Men Woman	14 23		35.42 34.42	76.79 74.08	173.64 157.38	3.43 0.40	31.47 5.53
	Σ	37	Mean S.D.	34.78 2.78	75.03 13.51	163.08 9.11	3.83 3.67	34.44 32.36
40-49	Men Woman	14 19		43.24 42.47	78.77 67.00	172.06 158.47	3.83 3.49	31.22 28.70
	Σ	33	Mean S.D.	42.88 2.80	73.22 13.33	165.69 8.31	3.69 0.44	29.96 5.25
50-59	Men Woman	11 12		53.20 54.50	77.50 72.50	169.80 160.38	3.89 3.49	31.22 28.70
	Σ	23	Mean S.D.	53.85 2.46	75.00 14.89	165.09 7.78	3.69 0.44	29.96 5.25
60-69	Men Woman	8 5		63.83 62.83	69.83 69.50	168.33 154.33	3.59 3.36	28.26 24.50
	Σ	13	Mean S.D.	63.33 1.78	69.66 14.37	161.33 8.65	3.47 0.38	26.38 3.66
Total	Men Woman	59 90		53.42 43.91	75.35 69.96	170.06 157.54	3.77 3.58	31.31 30.96
	Σ	149	Mean S.D.	47.71 2.50	72.12 13.77	162.55 8.56	3.65 0.38	31.10 5.23

Time Allowance Equation

An equation that considers individual energy production was formulated. The model considers the energy requirement for the task and compare it with the energy available of the worker (according to age and gender). The objective was to reduce the energy consumption below the recommended limits at work adding more time to the execution of the work task. The equation proposed uses the current energy expenditure in work task (GE) minus the resting metabolism rate of the worker (Eir), divided by half the maximum capacity (expenditure limit) of the person according to age and gender (Eid), minus, once again, the resting metabolism rate (Equation. 1).

$$TOL = (GE - Eir)/(Eid - Eir) \quad (1)$$

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The units of the model are relative to body weight in ml/kg/min. The necessary factors for calculating allowance factor (TOL) are as follows:

1. Age
2. Gender
3. Body weight
4. Smoking
5. Physical shape of the individual
6. Metabolic rate (Eir)
7. Capacity in terms of: Maximum oxygen consumption of the individual (Eid x 2)
8. Expenditure in work task (GE)
9. Workload level

The age (A), gender (B), body weight (C), smoking (D), and physical shape (E) were obtained directly from the participant and was fed in the Sunnto software that computes the energy consumption. Because it was not possible for most companies to allow direct measurement of the resting metabolic rate and VO2max of the worker directly, we made use of the equations for obtaining basal metabolism (F) published by the International Labor Office (Kanawaty, 1992); these are based on the age ranges and gender of the people. For VO2max (G) in people of different ages, tables of local statistics were used (Sandoval & Ramos, 1995). The tables mark a difference in VO2max according to age range and gender. In the application of equation 1, it is required that conversion units of basal metabolic rate and the maximum capacity for producing energy be the same (e.g. kcal, VO2, Watts, etc.). The 50% of the VO2max is only considered when rests in the occupational activities are available; otherwise, 33% of the VO2max must be used. The energy expenditure in work task (H) was obtained by direct measure of participants using the Sunnto Team Pod. The workload level (I) was obtained after GE (H) calculation according with Astrand and Rodah classification presented the first section of the document. At least, 20 cycles were taken on each activity.

The factor obtained from equation 1 must be multiplied by the normal time (cycle time) of the workstation in order to obtain the ST of the operation. That is, if the normal time is 80 s and the calculated allowance computed by personal data in Equation 1 is 1.033 then the new ST would be: $80 \times 1.033 = 82.64$ s. It is important to remark that equation variables (Eir, Eid, and GE) can be calculated by different methods according to the data and the availability of the resources. ISO 8996 provides different estimation methods regarding metabolic rate.

Procedures

Measurements were taken on repetitive tasks that possessed an aerobic load from a moderate to very heavy level. Physiological factors such as age, gender, weight, smoker, and physical condition level were collected at the beginning of a shift, as well as an explanation on how to wear the chest strap. In the first part of the experiment, production lines were monitored considering the actual ST with no modification in the process, and information that contained unexpected interruptions to the process was discarded. The first collected data were used to classify the workload level.

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Data obtained from chest strap was stored in a laptop, while the VO2 was calculated using the software for the estimation of metabolism, which was validated previously (Balderrama et. al, 2010). Thereafter, the average consumption of the oxygen was calculated for each worker (GE) and then subtracted from the allowed oxygen consumption according to his or her age and gender (Eir). To determine the allowed oxygen consumption, international recommendations were taken into consideration to compare whether work tasks exceeded the 50% of VO2max (33% if rest are unavailable). Thus, VO2max was calculated using the local tables that were published by the Institute of Social Security (Sandoval & Ramos, 1995).

After detection of the workstations that exceeded the recommended limit (exceeded the 50% of VO2max), ST was modified by adding the time that includes the calculated allowances. This procedure was developed to evaluate the proposed equation. To implement the new ST increased in time, some strategies have to be taken to avoid affecting the work rates of the shift; more workers to the production line or more stock were introduced to the workstations. All the activities were performed to meet the requirements presented in Time Allowance Equation section. It should be noted that this study decided to disregard light workload activities due to a previous study (Balderrama, Flores, & Maldonado, 2015) that did not give significance of this level of activity.

Statistical Analysis

A total of five analyses were considered in the experiment: (a) a general linear model of analysis of variance (ANOVA) was carried out using the data of the VO2 in the task; the purpose was to determine whether age, gender, and other factors were significant factors that affect the energy expenditure of the task; (b) a paired t-test was conducted in order to detect whether the workers surpassed the recommended limits of the energy consumption in the workstation according with age and gender. Age groups split in male and females were compared with the average energy consumption on each work station; (c) a similar paired t-test test was developed, but this time, the data of VO2max of men from 20 to 30 years was introduced in the analysis; the reason, to simulate the work performed only by young male workers and figure it out whether they surpass the recommended limits of work; allowances were collected to run (d) a normality test to the results; (e) lastly, a paired t-test to analyze whether the new standard time with time allowances introduced, could reduce the energy consumption below the recommended limits. Minitab Software© was utilized to analyze statistical data including all the figures presented.

RESULTS

Results are presented according to the statistical analysis proposed in chapter 2.5 taking the same letters sub-division:

1. The ANOVA in the first part of the experiment reflects that only the factor introduced as workload level was a significant factor with a p value of 0.017. In other words, the variables introduced as age ($p = 0.067$), gender ($p = 0.567$), physical shape ($p = 0.740$), and smoking ($p = 0.100$) do not modify the response variable when a confidence level of 95% is used. Hence, the worker energy consumption (VO2) in workstation is not significantly different from one person to another and is only affected by the intensity of work.

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2. The paired t-test conducted to detect whether the VO2 in the task exceeds the allowed VO2, showed information to deduce that there is enough evidence to say that the VO2 required by the task is higher than the allowed limit (exceeded 50% of the person of maximum energy production) of the VO2 with a p = 0.0. The individual paired tests that considered age and gender in the three different workloads reflect that women older than 30 years surpass the recommended energy limits when they perform moderate, heavy, and very heavy tasks (according with Astrand and Rodah, 1977), while men older than 40 years surpass the recommended limits with heavy and very heavy tasks. In addition, women younger than 30 years surpass the limits in heavy and very heavy task, and men older than 40 years surpass the limits only in very heavy tasks. Figure 1 displays the difference of gender, age, and workload level when a limit of energy is considered. Values close to zero represent better energy to perform a task.
3. Results of the conducted simulating the workers having the VO2max of men in age ranging between 20 and 29 years, reflect that statistical evidence exists to deduce that young workers did not exceed the recommended limits of the energetic expenditure in all the considered workloads levels (p = 0.0). Figure 2 presents how the energy consumption can be below the limits if all the participants were younger men.
4. A residual normality test was conducted in order to validate the experiment obtaining a p value of 0.242 indicating normality in data.
5. Paired t-test performed after the application of the allowances indicates that the energy consumption of the workers did not surpass the energy recommended for 50% of their maximum VO2 (p = 0.00). Figure 3 shows a lower tendency of the VO2 after application of time allowances against results at the beginning of the experiment.

Figure 1. VO2 workload and recommended energy comparison

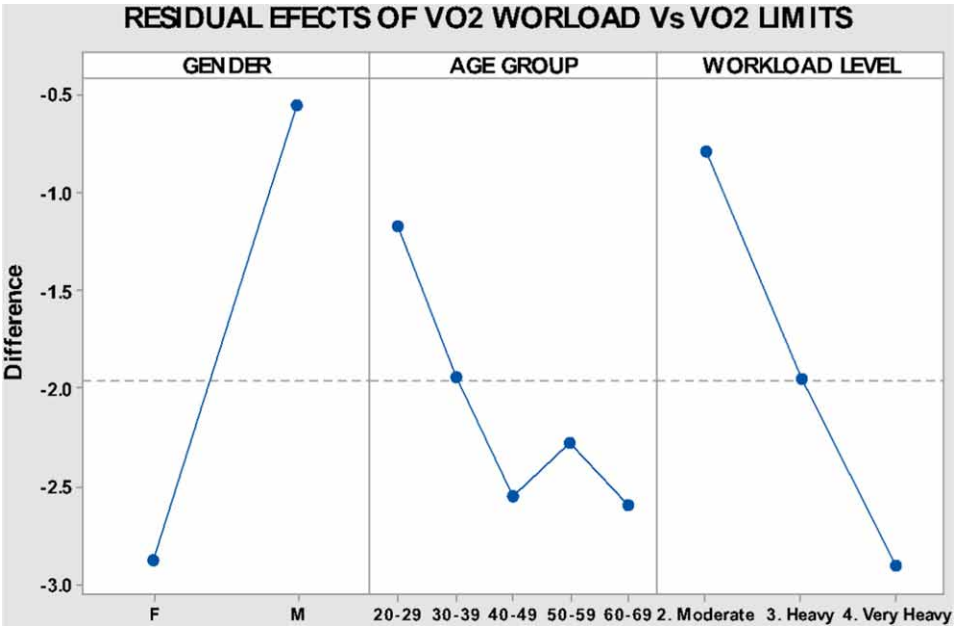

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Figure 2. Energy comparison considering 20–29 years energy level

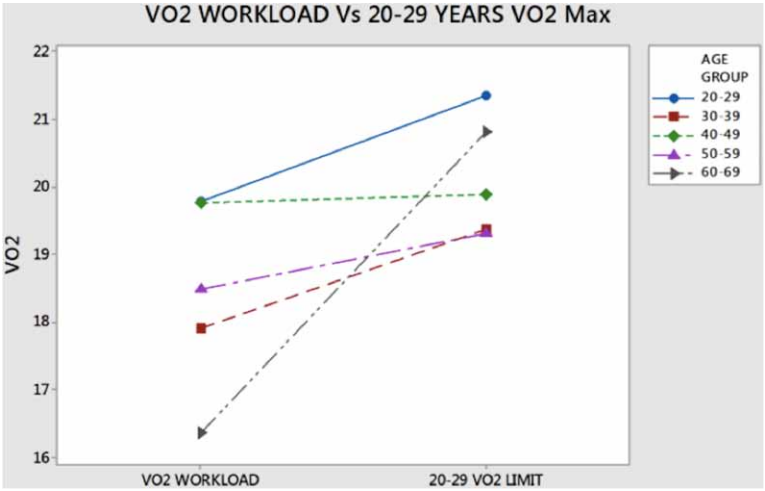
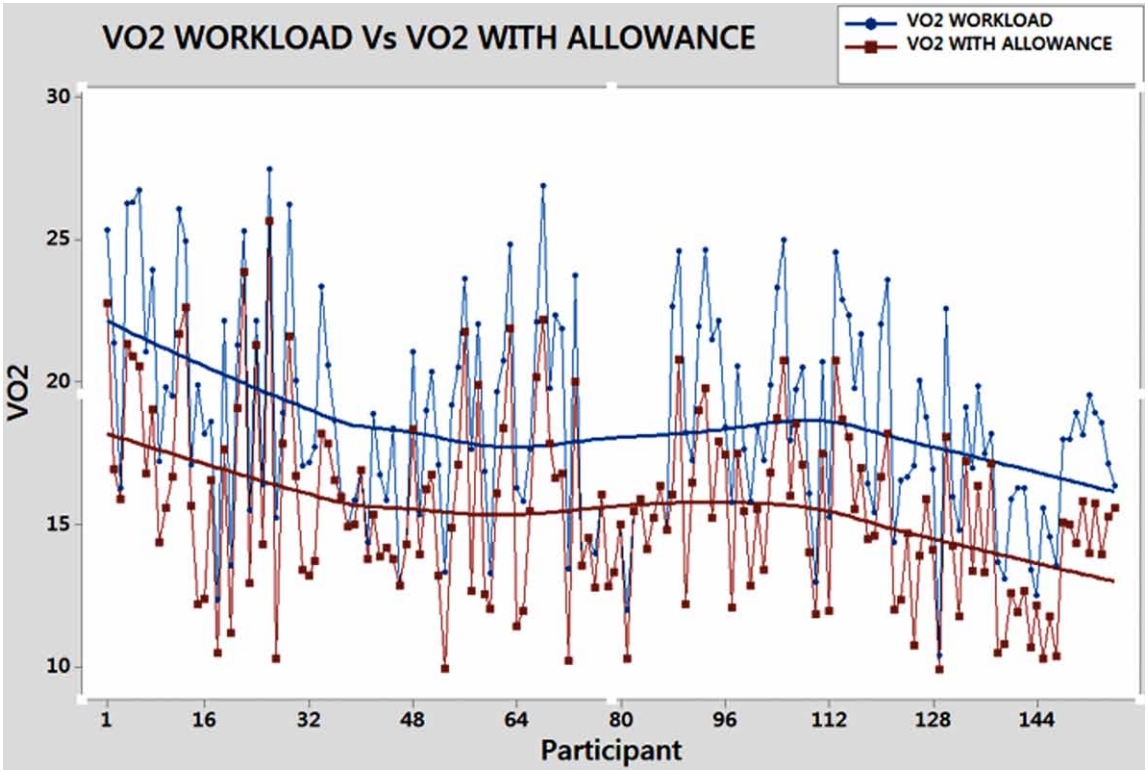


Figure 3. VO2 workload versus VO2 with time allowance



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DISCUSSION

This investigation confirms that workstations that possess similar workload, have no significant difference in the worker energy consumption in spite of the physiological conditions of the person. In other words, all persons have similar energy consumption in similar tasks, but the main difference is based on the fact that we have different capacity to generate energy during the day. This result matches up with Louhevaara (1999), Ilmarinen (2001), and the definition of ISO 8996, which states that the metabolic rate can vary from person-to-person, about ±5%, for the same work and under the same working conditions. Also, we confirm, and according to the bibliography presented, that men and women have significant differences in energy production as well as the reduction in energy production after the age of 30 years.

Results of this experiment regarding aerobic workloads that are controlled by ST let us to assume that moderate workloads (2.5–5.0 kcal/min) might be unsuitable for women who are older than 30 years. Heavy (5.0–7.5 kcal/min) and very heavy workloads (7.5–10.0 kcal/min) could be unsuitable for women who are older than 20 years. Similarly, men older than 40 years surpass the recommended limits in workstation over the 7.5 kcal/min.

In accordance with the aforementioned information, workloads determined by the ST are not suitable for all ages and gender, proving that they are only be accepted for specified age ranges. The proposed equation applied to ST reduced the worker energy consumption below the recommended limits suggested in bibliography that mention that workloads should be below of the 50% of the worker capacity to produce energy in one day.

Metabolic capacity of young individuals can be significantly different to carry out tasks with high metabolic requirements compared with adult workers. According to our experience, some companies take strategies to not assign high workloads to adults and women or assign breaks according to manager experience to achieve the recovery of worker, where there is nothing normative or mandatory on this respect. Systems in industry designed to introduce brakes or rest pauses do not consider age and some companies assign pauses according to administrative interests and not when the operator needs it. An allowance of time within the standard time could be a good response to high working demands due the manipulation of the rest by worker each cycle time, achieving a recovery rate throughout the workday in better manner than rest pauses.

CONCLUSION

ST is a valuable planning tool for several important production factors; however, it could affect people depending on their age and gender. The addition of time through a ST allowance helps to accomplish manual aerobic work more equilibrated according to the amount of energy a person can produce. To implement compensatory equation, the acceptance of the problem and its implementation willingness is required. Depending on the production process, the allowances can be introduced individually or according to the characteristics of small working groups. The proposed equation differs from other models because it considers the age and gender of the employee and the feasibility of applying it systematically through ST.

The recommendation of this study is to provide opportunities to the workers to keep energy reserves at the end of the shift in order to succeed on their day-to-day life, to enhance the quality of their lives, and to promote an occupational health program to improve the productivity of the manufacturing com-

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panies. Inclusion of the aging people must be one of the commitments of this era due the worldwide increment of old people.

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Chapter 31
Ergonomic Bench to Decrease Postural Risk Level on the Task of Changing Forklift's Brake Pads: A Design Approach

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ABSTRACT

Development of musculoskeletal disorders caused by awkward postures are present in tasks performed in small companies. Consequently, this chapter evaluates the postural risk level associated to the task of changing brake pads of a forklift, and proposes the design and the implementation of an ergonomic bench that helps to reduce this level of postural risk. As methods, postural risk level corresponding to the task was determined using REBA, whereas anthropometric analysis was developed, and axiomatic design and TRIZ methodologies were used to develop the proposed design. Results showed a REBA score of 8 (high-risk level). The final design is done of nylamid, and it contains some TRIZ principle, such as copying, extraction, and dynamicity. Respect axiomatic design, the bench meets some functional requirements, such as support the user's weight, avoid unsafety conditions, and be adjustable. With the TRIZ principles and functional requirements, this bench will help diminish postural risk level.

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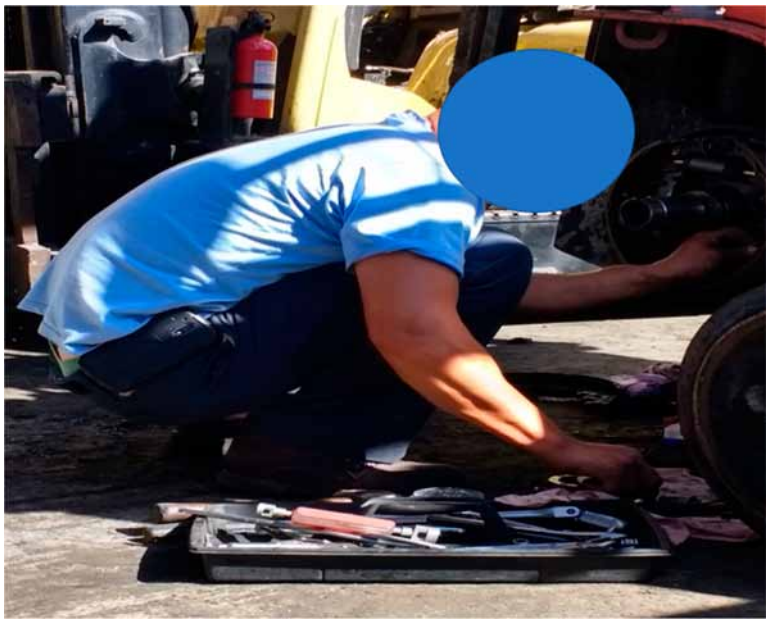
INTRODUCTION

Most of the ergonomic assessment methodologies adopted in the manufacturing industry are implemented to assess ergonomic hazards in the production area (Tompa, Dolinschi, de Oliveira, Amick, & Irvin, 2010), yet other processes, such as machinery maintenance/repairs, material transportation, and/or plant cleaning, require similar ergonomic evaluations to ensure employee safety. To address this gap, this research takes place in a company that repairs and sells industrial machinery.

It is well known that maintenance and repairing tasks force employees to adopt awkward postures (Barros, Marçal, & Soares, 2015; Teymourian, Seneviratne, & Galar, 2016) and apply excessive force. In this sense, the maintenance technicians of the company wherein this study was conducted have claimed to experience discomfort when they change forklift brake pads. This task takes approximately one hour per brake, and to complete it, the technicians usually adopt awkward and long-lasting postures. According to the employees, the main musculoskeletal complaints experienced are in the back, the ankles, and the knees. Even though knee pads are worn, the employees claim these are not an effective solution to pain and discomfort. Figure 1 depicts the typical posture adopted by the employees as they change forklift brake pads.

According to the literature, awkward postures have a negative effect on employee health and performance. They can cause soft tissue injuries that favor the accumulation of metabolites and accelerate disc degeneration, which can ultimately lead to disc herniation (Roffey, Wai, Bishop, Kwon, & Dagenais, 2010). Also, awkward workplace postures can increase the risk of suffering from musculoskeletal disorders (MSDs) – such as osteoarthritis (da Costa & Ramos-Vieira, 2009; Gallagher, Pollard, & Porter, 2011) and fibromyalgia (da Costa & Ramos-Vieira, 2009) – and are strongly associated with low back pain (LBP) and whole-body vibration (Vandergrift, Gold, Hanlon, & Punnett, 2012).

Figure 1. Posture adopted by employees during the task of changing forklift's brake pads
Source: Prepared by the authors (2017).



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As regards employee performance, awkward postures are less efficient than postures that keep joints near to a neutral posture (Gangopadhyay, Ghosh, Das, Ghoshal, & Das, 2010). Also, it has been argued that awkward postures force employees to apply more force than necessary to accomplish a particular task. Such excessive force in turn affects muscle loading and compressive forces on the internal vertebral disc.

The literature shows the need to improve the working conditions of those who adopt awkward and unsuitable postures to do their jobs. In the context of our research, one alternative to addressing this need is to design a bench, as an ergonomic work tool, to ensure that the technicians can change the brakes safely and comfortably. The importance of this bench relies on its advantages as an ergonomic intervention. Ergonomic interventions do not only reduce workplace hazards and increase employee safety; from a corporate point of view, they provide economic benefits, since they prevent companies from incurring additional costs (e.g. employee insurance) and increase employee retention, since workers feel and are safe.

LITERATURE REVIEW

REBA

The Rapid Entire Body Assessment (REBA) method is a highly sensitive tool for postural analysis. It is employed to assess unpredictable postures within the work environment. According to several researchers, REBA can be effectively applied to evaluate MSDs, since it provides the following advantages (Hignett & McAtamney, 2000; Maldonado-Macías, Realyvásquez, Hernández, & García-Alcaraz, 2015):

1. It develops a sensitive postural analysis system for MSDs risks in a variety of tasks.
2. It divides the body into segments that are individually encoded.
3. It provides a scoring system for muscular activity caused by static, dynamic, rapidly changing, and unstable postures.
4. It provides an action level with an urgency indication to find the kind of ergonomic interventions that must be implemented.
5. It is not time-consuming or resources consuming.

As mentioned, REBA has an action level system to support decision making after performing the postural analysis. This system is detailed in Table 1.

Table 1. REBA's action level system

Action Level	Score	Risk Level	Required Corrective Actions
0	1	None	Corrective actions and further assessments are not required.
1	2-3	Low	Corrective actions and further assessment may be required.
2	4-7	Medium	Corrective actions and further assessments are required.
3	8-10	High	Corrective actions and further assessments are required as soon as possible.
4	11-15	Very high	Corrective actions and further assessments are immediately required.

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REBA is a popular method for postural analysis and MSDs risk assessment. In their research, (Lee, Yu, Choi, & Han, 2011) used this method to evaluate the task of large glass panels installation in the construction industry. Similarly, (Maldonado-Macías et al., 2015) relied on REBA to analyze various tasks of the computer repairing process and identify levels of MSDs risk. As results, the authors found high levels of MSDs risks in every task and proposed a series of ergonomic interventions to address the ergonomic issues. Likewise, a most recent study performed by (Shirzaei, Mirzaei, Khaje-Alizade, & Mohammadi, 2015) evaluated ergonomic factors and profession-related postures with dental students. The authors directly observed the students' postures while treating patients. The analyzed postures were scored using REBA, and the results showed a medium level of risk for most subjects (84%).

Anthropometry

Anthropometry is the study of human body measurement and is used in the engineering sciences to ensure maximum product benefit and capability (Robinette, 2012). The field of application of anthropometry is broad and includes the description, comparison, evaluation, and identification of individuals or groups of individuals. Usually, anthropometry is used to describe the morphology of an individual or a sample of individuals. In addition, it can be used as a comparison basis of a population's sample to other samples or comparisons of the same sample over the time. For instance, the growth status of children that participate in specific sports competitions (Malina, 1995).

Anthropometry has a variety of applications in the design area. For instance, (Madriz-Quirós, Ramírez-Coretti, & Serrano-Montero, 2008) performed an anthropometric study to design ergonomic furniture for school age children in Costa Rica. The study included a sample of 1,293 children from all around the country, and 12 anthropometric measures were necessary to design the furniture. Similarly, (Azadeh, Fam, & Garakani, 2007) proposed a total ergonomic design approach to enhance productivity in complicated control systems. The proposal included performing an anthropometric study. In another work, (Gouvali & Boudolos, 2006) used anthropometry to find the match between school furniture dimensions and children anthropometry. Likewise, (Herrera-Ruiz, 2006) designed an amphibious wheelchair for hydrotherapy. For its design, the author used data from an already published anthropometric table.

Since anthropometric data follow a normal distribution, when a product is designed based on anthropometric data, percentiles and *Z*-scores are used to determine product dimensions (Hernández-Arellano, Aguilar-Duque, & Gómez-Bull, 2018). Percentiles are interpreted in the following way: if the *nth* percentile is determined for a specific body dimension, it means that *n*% are shorter than this percentile in this body dimension (Pheasant & Haslegrave, 2016). For instance, if the 95th percentile is calculated for anthropometric data of the height, it means that 95% of people have a height below than the 95th percentile value. To design the ergonomic bench, the authors had to know the anthropometry measures of the users (i.e. technicians) as well as the most appropriate design material and design methodology.

Nylamid

The bench to be designed must be robust and ergonomic. That is, it must be resistant enough to support the weight of the technicians, but and at the same it must be comfortable, easy to use, and easy to handle. The material that best satisfies these proprieties of the bench is Nylamid®. This material has a breaking strain of 142,559,000 N/m^2 (Martínez-Nopala, 2015), which is above the pressure that any person may exercise; also, it is two to eight times lighter than metals. Similarly, Nylamid® is rigid and has a

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desired mechanical, chemical, and thermal resistance (Herrera-Ruiz, 2006; Ramírez-Ibanez, 2004). A wide range of products are designed and manufactured using Nylamid®, such as rollers, chains, wear guides, impact parts, gears, pulleys, chairs (Herrera-Ruiz, 2006), vehicles (Martínez-Nopala, 2015), electromagnetic positioning systems, electrical power systems, and wind generators (Magdaleno-Adame, Olivares-Galvan, & Fofana, 2014).

Axiomatic Design

In engineering, Axiomatic Design (AD) sets the scientific and systematic basis of design processes. The main goals of AD are to increase creativity, reduce the random search process, minimize the iterative trial-and-error process, and determine the best designs among a set. Also, AD implies a continuous interplay between what designers/customers want to achieve and how they want to achieve it (Hirani & Suh, 2005; Suh, 1990, 2001). AD is a methodology that support the design of a wide variety of systems (manufacturing systems, software, products, and organizations, for instance) and establishes the customer needs (CNs) that the system must satisfy. Then, the functional requirements (FRs) and constraints (Cs) of the system to be designed are determined to meet such CNs. Next, the FRs must be matched to the design parameters (DPs). This step allows designers to identify and choose the DPs that are necessary to design the system. Once the DPs are chosen, designers must go to the process domain and identify the process variables (PVs) based on the creation of a new process or the use of an existing process (Suh, 1998).

The AD theory is composed of two key axioms, theorems, and corollaries. The first axiom sustains that the independence of the FRs must be always preserved. When there are two or more FRs, one of them should not affect the other. In this sense, the designer has to select the proper DPs to satisfy the FRs independently. This is done one by one in a mapping process between one FR and its corresponding DP (Won & Joon, 2005). Accordingly, the application of this axiom determines coupled, decoupled, and uncoupled designs. An ideal design is an uncoupled design, where one DP can satisfy each FR independently. However, these designs are commonly difficult to achieve, and decoupled designs can be acceptable designs as well. Both, uncoupled and coupled designs satisfy the independence axiom. On the other hand, a coupled design exists when DPs and FRs cannot be satisfied independently. In this case, designers must work creatively to change the product to a decoupled or uncoupled design.

Once the first axiom is accomplished, the second axiom is also required for better designs. The information axiom explains that, in all good designs, information content must be the minimum. This axiom establishes the idea that the success of a design is determined by the probability associated with achieving the FRs. This probability decreases with the amount of information necessary to fulfill the FRs (Lenz & Cochran, 2000).

The AD theory has been applied successfully in many areas. In their work, (Kulak, Cebi, & Kahraman, 2010) presented a literature review of AD applications and identified five application areas: product design (Ferrer, Rios, & Ciurana, 2009; Gumus, Ertas, Tate, & Cicek, 2008; Tang, Zhang, & Dai, 2009), system design (Bang & Heo, 2009; Helander, 2007; Lo & Helander, 2007), manufacturing system design (Durmusoglu & Kulak, 2008; Nakao, Kobayashi, Hamada, Totsuka, & Yamada, 2007; Schnetzler, Sennheiser, & Schönsleben, 2007), software design (Lindkvist & SÖDerberg, 2003; Togay, Dogru, & Tanik, 2008; Yi & Park, 2005), and decision making (Celik, 2009a, 2009b; Celik, Cebi, Kahraman, & Er, 2009). However, despite its multiple applications, some authors claim that AD by itself is not enough to solve design problems, and thus requires the support of techniques and methodologies for FRs determination and creative solutions. As a result, designers now combine AD with tools such as

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Failure Mode Error Analysis (FMEA), Design for Six Sigma (DFSS), the theory of inventive problem solving (TRIZ), and decision support multiattribute methods (Dickinson, 2006).

TRIZ

TRIZ is a Russian acronym for the Theory of Inventive Problem Solving. It was proposed by Altshuller and originated from several technical and patent information studies. The latter showed that only 1% of the solutions were truly pioneering inventions; the rest represented the use of previously known ideas and concepts but in a novel way (Altshuller, 1984; Yang & Zhang, 2000). This led to the conclusion that the idea of a design solution to a problem might be already known. But where and how this idea can be found? Based on a systematic view of the technical world, TRIZ provides different techniques and tools that help designers create a new design idea and avoid numerous trials and errors during the problem solving process (Yang & Zhang, 2000).

According to several authors, TRIZ is a powerful systematic ideation methodology for technical problem solving that leads to the enhancement of existent techniques (Kremer et al., 2012; Savransky, 2000). Moreover, TRIZ is a human-oriented knowledge-based systematic methodology of inventive problem solving (Savransky, 2000). In TRIZ, every factor that affects a system can be defined as a parameter, and there is a dependency relationship among system parameters. TRIZ structures a problem into a "contradiction statement" and derives solutions that address the problem statement both from technical and system perspectives. Hence, the ideality of the design increases as a parameter is improved without worsening the other parameter. In this sense, TRIZ demonstrates its capability as a support tool for original idea creation.

Despite the success of TRIZ in aiding idea generation, if implemented alone, TRIZ falls short in selecting the most appropriate idea. Therefore, using it in unison with appropriate tools – such as AD, in this study – is strongly recommended (Kremer et al., 2012).

TRIZ comprises 40 inventive principles to guide the TRIZ practitioner in developing useful concepts of solution for inventive situations (Yang & Zhang, 2000). Each solution represents a recommendation to make a specific change in a system and eliminate technical contradictions. The literature provides a contradiction table that recommends which principles should be considered in solving approximately 1,250 contradictions. Five of these 40 inventive principles are stated below (Altshuller, 2002; Technical Innovation Center, 2013):

- **Extraction:** Disturbing parts must be removed from an object only if it is necessary.
- **Counterweight:** Compensate for the weight of an object by combining it with another object that provides a lifting force.
- **Cushion in Advance:** Compensate for the relatively low reliability of an object with emergency measures prepared in advance.
- **Dynamicity:** The characteristics of an object or outside environment must be altered to provide optimal performance at each stage of an operation. Then, if an object is immobile, make it mobile, make it interchangeable, and divide the object into elements capable of changing their position relative to each other.
- **Copying:** It is better to use a simplified and inexpensive copy in place of a fragile original object, or an object that is inconvenient to operate.

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In the last decade, various works have illustrated the advantages of combining TRIZ and AD and have reported how these techniques complement each other. AD analyzes the problem and structures it in the most suitable way, whereas TRIZ can solve the minimum number of design conflicts that are intrinsically present in a case study (Borgianni & Matt, 2016). That said, when TRIZ is combined with AD, it can analyze a complex problem and deduce the most relevant conflicts, since TRIZ uses AD to appropriately structure the problem. Similarly, AD is useful for analyzing the system and its requirements, but it completely lacks means to identify technical solutions. These solutions, according to the axioms that guide the design process, should be appropriately characterized by satisfying performances for each requirement and high controllability of the system. In conclusion, both methods – TRIZ and AD – can be applied jointly thanks to the not contradictory objectives they have.

METHODOLOGY

To design the bench from an ergonomic approach, authors propose a cross-sectional, non-experimental methodology that comprises six stages. The following sections review the used instruments and thoroughly discuss the methodology stages.

Instruments

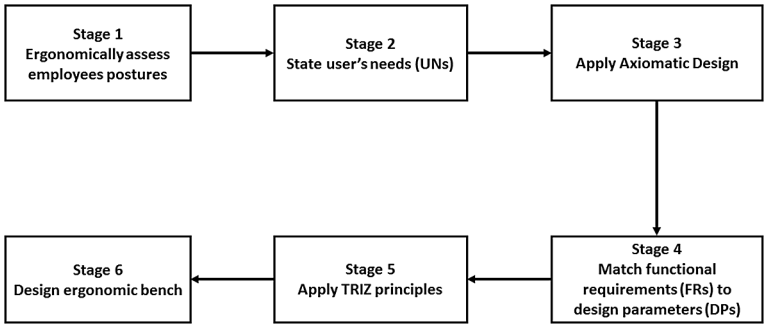
Authors relied on the following instruments to design the bench from an ergonomic approach:

- **Computer Equipment:** Laptop Sony Vaio®
- **REBA, Online Software**
- **Design Software:** Authors initially decided to use SolidWorks® software, but due to a lack of experience, they finally used PowerPoint and Paint. Both programs encourage user creativity.

Method

As previously mentioned, the methodology followed to design the ergonomic bench comprises six stages as depicted in Figure 2.

Figure 2. Methodology proposed to design the ergonomic bench
Source: Prepared by the authors (2017).



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Stage 1 - Ergonomically Assess Employee Postures: The REBA method was implemented to ergonomically evaluate the postures adopted by the technicians in the task of changing forklift brake pads. To this end, authors relied on REBA online software, available on the *ergonautas* platform (Ergonautas.upv.es, 2017).

Stage 2 - State User Needs (UNs): Authors defined the technicians' needs that had to be satisfied by the ergonomic bench.

Stage 3 - Apply Axiomatic Design: Once the UNs were identified, authors defined the FRs of the design that had to satisfy such UNs. Also, authors set the constraints that would limit the ergonomic design of the bench.

Stage 4 - Match FRs to DPs: Each FR was assigned a DP that would allow the bench to meet the said FR. Likewise, authors relied on anthropometry to set the measures of the bench. Since the company has only eight employees, authors used the anthropometric data presented by (Ávila-Chaurand, Prado-León, González-Muñoz, & Muñoz, 2007), which correspond to a sample of 369 male industrial employees, ranging from 18 to 65 years old. That said, authors only used the data of those body segments that would interact with the bench. When designing for extremes, the dimensions of the ergonomic bench were defined by applying the 5th and 95th percentiles, calculated by means of equation (1) (Hernández-Arellano et al., 2018):

$$P_n = \overline{x} + Z\sigma \tag{1}$$

where P_n represents the value obtained for the *nth* percentile, $\overline{x}$ is the average value of the anthropometric data for a specific body segment, Z is the score of the accumulated normal distribution corresponding to the *nth* percentile, and σ is the standard deviation of the anthropometric data. Table 2 shows the corresponding Z-scores of each percentile.

Table 2. Percentiles and corresponding Z-scores

Percentile	Z-Score
5th	-1.645
95th	1.645

Stage 5 - Apply TRIZ Principles: Once authors defined the UNs, FRs, Cs, and DPs, they searched for an existing design that could meet our FRs after performing the necessary modifications on it, following the TRIZ principles.

Stage 6 - Design the Ergonomic Bench: Once the percentiles of the bench were defined, authors built the piece of furniture using Nylamid as the design material.

RESULTS

The results of the proposed design methodology are discussed below:

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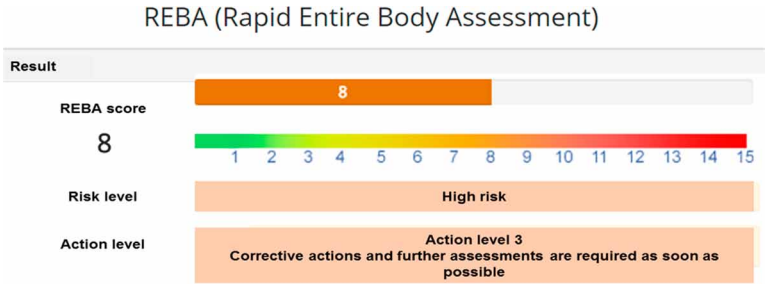
Stage 1 Results

Figure 3 shows the REBA score, the level of MSDs risk, and the action level obtained for the brake pads changing task. As can be observed, the score (8 points) implies a high level of MSDs risk for this task. Therefore, corrective actions and further assessments are required as soon as possible (Hignett & McAtamney, 2000; Maldonado-Macías et al., 2015).

Figure 3. REBA (Rapid Entire Body Assessment) score for the task of changing forklift brake pads
Source: Adapted from (Ergonautas.upv.es, 2017).



Stage 2 Results

According to the results of stage 1, four UNs were identified: comfort, long-term health, short-term safety, and efficiency.

Results for Stage 3

The FRs that meet the identified UNs are:

- **FR_0 =** Efficiency
- **FR_1 =** Support user weight
- **FR_2 =** Help maintain correct posture
- **FR_{21} =** Adjustable
- **FR_3 =** Avoid unsafe conditions

FR_1 will help employees perform the task comfortably, since they no longer will have to support their own weight with the thighs. On the other hand, FR_2 will allow the technicians to adopt a healthier posture if compared with the one they currently adopt. That said, the bench can guarantee a correct posture if its design is anthropometrically adjustable – i.e. the design comprises FR_{21}. Both FR_2 and FR_{21} can improve employee health as they prevent MSDs occurrence. Finally, FR_3 will provide safer working conditions for the task of changing forklift brake pads.

Together, FR_1, FR_2, FR_{21}, and FR_3 achieve FR_0 = efficiency, as they provide comfortable and safe postures for the technicians to reach components without extending the upper limbs. However, designs also imply constraints. In this work, authors identified two constraints that may prevent the design from

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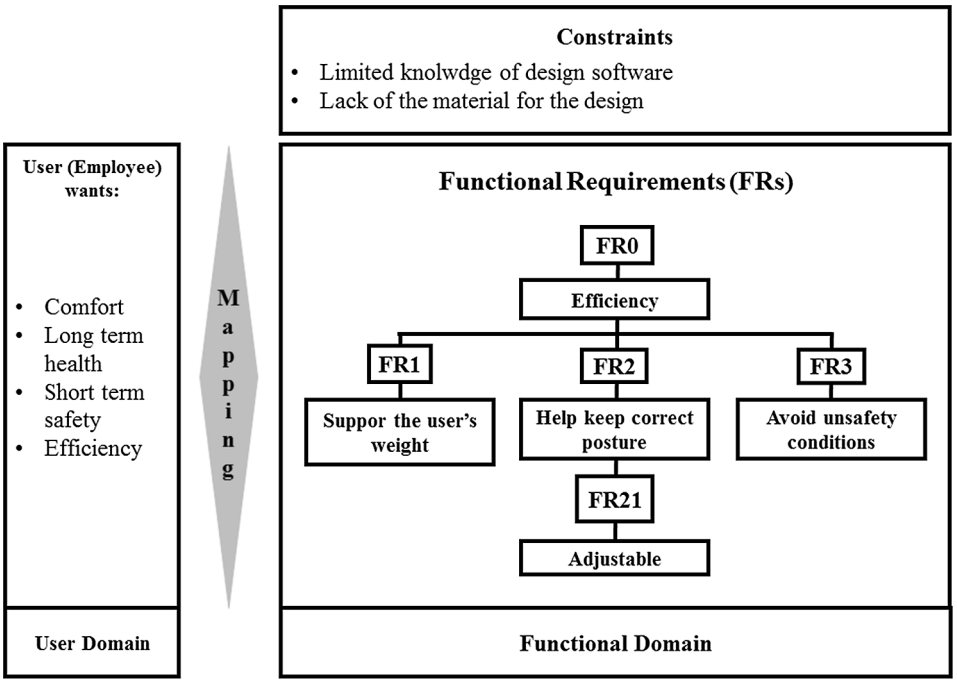
being carried out: a lack of experience in using design software and a lack of material (i.e. Nylamid). In this sense, Figure 4 shows the mapping between the UNs (customer domain) and the FRs (functional domain) and the design constraints.

Figure 4. Design constraints and mapping from user (or customer) domain to functional domain
Source: Prepared by the authors (2017).



Results for Stage 4

Since the observed technicians support most of their weight with their thighs when they change forklift brake pads (i.e. they squat), FR_1 – support user weight – was related to DP_1 = create a seat. This seat will support most of the technicians' weight. On the other hand, since the employees flex their trunk when they change forklift brake pads, FR_2 – help maintain correct posture – was associated with DP_2 = Create a tilted support for the trunk. This DP_2 will allow employees to flex their trunk without supporting a force to maintain this position. Then, FR_{21} – Adjustable seat – was matched to DP_{21} = Design the seat and the trunk support with an adjuster. The adjuster will help employees fit the seat and the support according to their anthropometric measures. Finally, to meet FR_3 – avoid unsafety conditions – authors considered DP_3 = Design the seat and the trunk support with cotton pads covered with rubber. Cotton pads will cover the seats and the trunk support to offer comfort and protection.

Then, the design matrix is given by equation (2) and equation (3):

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$$\begin{Bmatrix} FR_1 \\ FR_2 \\ FR_3 \end{Bmatrix} = \begin{bmatrix} A_{11} & 0 & 0 \\ 0 & A_{22} & 0 \\ 0 & 0 & A_{33} \end{bmatrix} \times \begin{Bmatrix} DP_1 \\ DP_2 \\ DP_3 \end{Bmatrix} \tag{2}$$

$$\{FR_{21}\} = [B_{11}] \times \{DP_{21}\} \tag{3}$$

where A_{ij} and B_{11} represent non-zero elements and 0 represents a zero element.

The design equations for the matrix stated above are given by equation (4), equation (5), equation (6), and equation (7) as follows:

$$FR_1 = A_{11} \times DP_1 \tag{4}$$

$$FR_2 = A_{22} \times DP_2 \tag{5}$$

$$FR_{21} = A_{11} \times DP_{21} \tag{6}$$

$$FR_3 = A_{44} \times DP_3 \tag{7}$$

The design is uncoupled since the design matrix is diagonal. Therefore, the information content is zero, and it does not violate the information axiom (Cochran, Eversheim, Kubin, & Sesterhenn, 2000; Kim & Cochran, 2000). Hence, to obtain the best design, the sequence must be the following:

1. Create a seat.
2. Create a tilted trunk support.
3. Design the seat and the trunk support with an adjuster.
4. Design the seat and the trunk support with cotton pads covered with rubber.

The body dimensions used to design the ergonomic bench were the following:

- **Weight:** This dimension was taken into account since the technicians adopt a squatting posture when changing the forklift brake pads. Therefore, the bench is intended to support the technicians' weight.
- **Popliteal Height:** This dimension was used to define the seat's height.
- **Sitting hip Width:** This dimension was used to define the seat's width.
- **Buttock-Popliteal Length:** This dimension was used to define the length of the seat.
- **Seated Shoulder Height:** This dimension was used to define the height of the trunk support.
- Transverse diameter of the thorax.

Table 3 shows the average $\bar{x}$, the standard deviation (SD), and the 5th and 95th percentiles obtained from the anthropometric data for each body dimension that would interact with the bench. The percentiles were calculated by means of equation (1). It is necessary to clarify that these dimensions do not consider tolerances for clothing and footwear.

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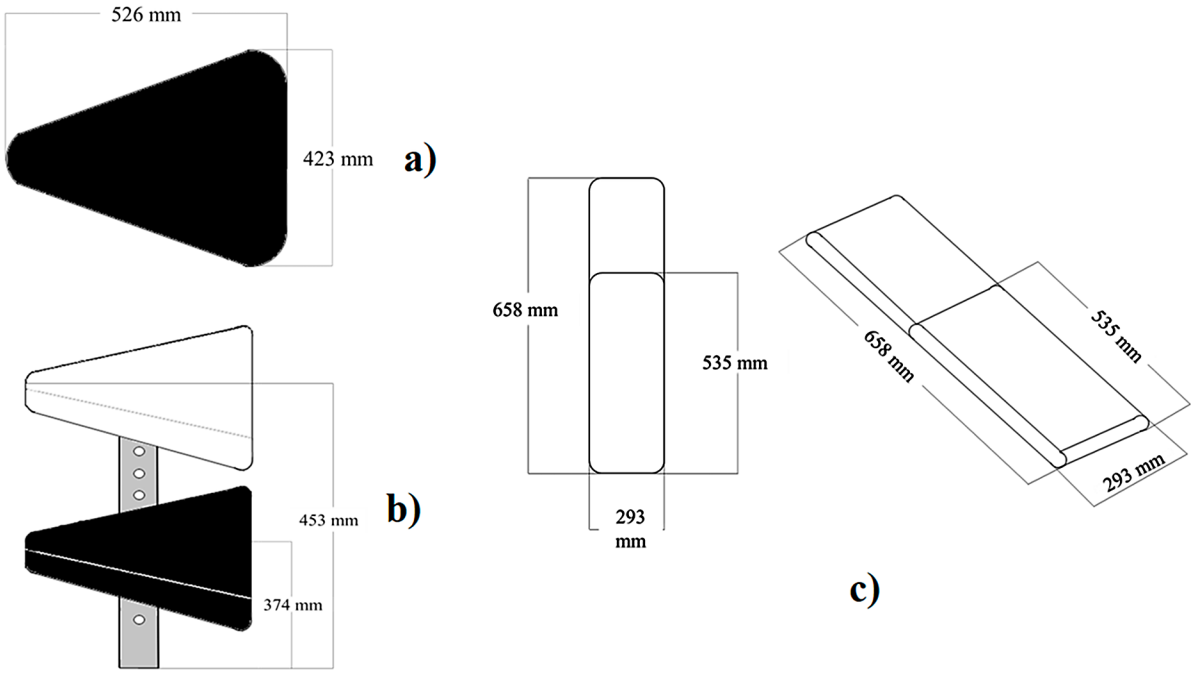
Table 3. Body dimension, bench dimension, and corresponding percentiles

Body Dimension	Bench Dimension	$\bar{x}$	SD	Percentiles	
				5th	95th
Weight (Kg)	Material for seat and support for trunk	73	12.33	55.31	97.30*
Popliteal height	Seat height	412	25.65	374*	453*
Sitting hip width (mm)	Seat width	374	31.26	328	423*
Buttock-popliteal length (mm)	Seat length	476	28.92	432	526*
Seated shoulder height (mm)	Trunk support height	581	27.63	535*	638*
Transverse diameter of the thorax (mm)	Trunk support width	342	34.12	293*	398

* Percentiles selected to design the ergonomic bench.

Figure 5 presents the bench components and their corresponding dimensions. Note that these dimensions correspond to the indicated percentiles of Table 3. The width of the trunk support was designed with the 5th percentile of the transverse diameter of the thorax to allow employees to freely move their arms and easy access their work area.

Figure 5. Bench components and dimensions: a) seat, b) seat height, c) support for trunk
Source: Prepared by the authors (2017).



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Stage 5 Results

After carefully reviewing pre-existing designs, authors selected the one depicted in Figure 6 as the starting point to develop our design. To make sure the pre-existing design could help meet the abovementioned FRs, authors applied the TRIZ principle of copying. Then, our ergonomic bench was designed with the anthropometric dimensions presented in Figure 5.

As can be observed in Figure 6, the height of the original support trunk is not adjustable; thus, authors redesigned this component according to the anthropometric dimensions presented in Figure 5c. However, the support is adjustable with respect to the angle taken by the trunk. Authors kept this DP, since it would help the technicians reach the forklift components comfortably. Then, they applied the dynamicity principle to the original design by adjusting the height and inclination of the trunk support and the height of the seat. Next, they implemented the extraction principle by removing those parts that would interfere with the employees' motions and their work area. Figure 6.b shows the removed parts circled in black. The base was positioned closer to the seat to reduce uncomfortable distances between the technicians and the forklifts. Likewise, the counterweight principle was applied to make sure that the technicians' weight could be supported by the ergonomic bench. Finally, authors implemented the cushion in advance principle by adding cotton pads for the seat and the trunk support. These pads provide a soft and comfortable contact between the users (i.e. technicians) and the bench parts.

Figure 6. Starting point for the design of an ergonomic bench: a) original design, b) removed parts
Source: (Ebay, 2016).

Stage 6 Results

Figure 7 shows the final design of the ergonomic bench. The colored lines represent the design dimensions based on the percentiles introduced in Table 3. Also, note that the trunk support is now height and angle adjustable, whereas the seat is only height adjustable. The solid part is made of Nylamid, which is a light and resistant material (Estrada-López, Vilchis-Martínez, Gutiérrez-Osorio, Arellano-Carmona, & Borja-Ramírez, 2013). Finally, note that the drawing shown in Figure 7 is not necessarily to scale. For instance, the maximum height of the seat is not on scale with the maximum height of the trunk support.

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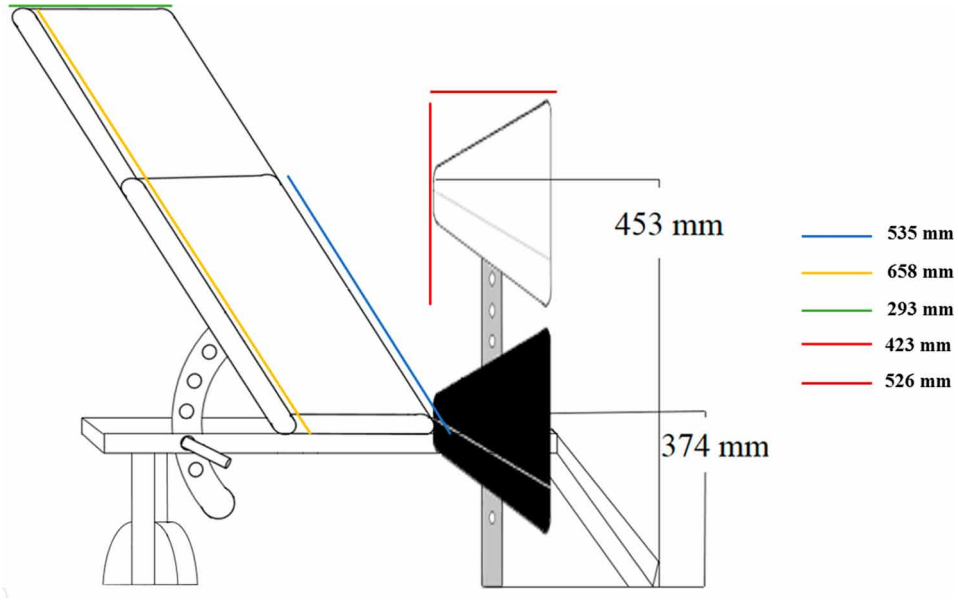
Figure 7. Final ergonomic bench design
Source: (Ebay, 2016).



FUTURE WORK

As future work, authors will seek to actually construct the ergonomic bench and implement it. During the implementation process, research will aim to test the effects of the bench characteristics on factors such as employee performance, MSDs incidence, and manual handling. Then, the obtained results could contribute to a better understanding of employee safety, performance, and comfort. Moreover, since the level of postural risk was calculated by using REBA, it is convenient to bear in mind that to define this variable, REBA takes in into account whether a seat supports user weight, but it does not consider whether the weight is supported by a seat and a trunk support, as in this case. This means that, in the future, if a REBA analysis is conducted in a setting wherein this new ergonomic bench is implemented, the analysis would only take into account the trunk posture, but it would not consider whether the weight of the trunk is supported by the bench, which decreases the postural load on the person. For this reason, authors believe there might be an opportunity to further explore the shortcomings and limitations of REBA and propose an update.

Another ergonomic solution for the task of changing forklift brake pads is an underground elevator, yet the final decision on whether implementing the bench or the elevator might depend on cost-related factors in terms of construction, implementation, and maintenance. That said, the elevator would allow employees to select a comfortable height and restful postures to change the brake pads. Also, the elevator would allow the company to save space, but it must be designed according to the anthropometric measures of its employees. Finally, authors encourage small companies from all the industrial sectors to research on and implement ergonomic tools that can enhance their performance while offering employees health and safety.

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CONCLUSION

This research argues that anthropometry, combined with AD and TRIZ, is an excellent design tool, not only from an ergonomic approach, but in general. The importance of anthropometry lies in its ability to provide designers with precise design dimensions derived from the very specific characteristics of a sample. This makes anthropometry not only appealing, but also time-saving and resource-saving, since it prevents companies from implementing equipment devised from the characteristics of their employees. As for AD, authors conceive it as a tool that helps designers stay on the right track to reach their design goals. User needs, functional requirements, and design parameters serve as guidelines to the design process. Similarly, when implemented from an ergonomic point of view, TRIZ increases creative problem solving. Finally, as regards the ergonomic bench, authors expect that its implementation could diminish the level of MSDs risk in the task of changing forklift brake pads.

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KEY TERMS AND DEFINITIONS

Adjustability: An object's capability to adjust or adapt itself to the requirements and need of different users.

Bench: A piece of furniture in which one or more people can sit to adopt a comfortable posture and decrease muscle fatigue.

Body Dimensions: Distances of body segments measured between two defined points. For instance, the height of a person is the distance measured from the ground up to the vertex of the person in standing position.

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Ergonomic Design: Design that applies ergonomic tools, such as anthropometry, and allows objects to be adapted to human capabilities and limitations.

Forklift: Vehicle used in the industry to transport material on pallets, which are supported by two forks of the forklift.

Percentile: In statistics, a position value that indicates the percent of ordered data that are below that percentile. For instance, the 5th percentile is the value under which 5% of data are.

Postural Risk: Risk derived by postural load supported by different body segments when a person adopts an uncomfortable body posture. This risk is proportional to the time posture is adopted, its frequency of occurrence, and its deviation level of neutral posture.

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Chapter 32
An Ergonomic Analysis on Working Postures of Construction Site Workers: A Framework for Construction Site Workers

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ABSTRACT

Risk factors related to work activity and ergonomics can enhance the probability that some persons may develop a MSD (musculoskeletal disorder). Usually the MSD develops due to high task repetition, forceful exertion, and repetitive/sustained awkward postures. MSD is also found in some cases where workers are engaged with working in awkward postures, cold temperatures, contact stress, heavy load, static postures, and vibration, etc. Many studies explain the problems for MSD, but in this chapter an effort is taken to rank the maximum body movement and body parts as per the different types of work flow system such that ergonomics design can be planned. Physical disorders can be avoided by finding and ranking the difficult task and the affected body part due to that kind of work. The prioritization of task will help the organization to think of sustainable designs of working procedure or instruments or machines to provide maximum comfort to humankind. It may also help to frame policies for occupational safety and hazards in workplace.

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INTRODUCTION

Rapid development in industrialization methods and technology demands higher production rates. Modern technology increases the demand for products and makes industries competitive. To survive in the business human race has to deal with sophisticated machines and processes. This interaction between human and machine interaction or ergonomics uses the principle of natural laws of work to solve anatomical & physiological problems between man & machine. Many companies like construction, manufacturing, mining demand more human interactions. Basically, construction companies play a vital role and act as the building blocks for the development of a country. Improper management in the workplace will reduce the productivity of construction company and ergonomic performance of various workers. To study the ergonomic performance of workers in heavy working conditions like construction company a questionnaire-based survey is conducted. The send questionnaires are classified under the following three primary classifications or factors: (a) human/labor related factors; (b) task-related factors; and (c) equipment/tools-related factors based on various age groups and occupations of the construction workers by literature review. Industry practitioners and researchers can use the primary outcomes of this study in developing systems to enhance and improve health and safety of the construction workers for effective management of construction labor workforce and to achieve a competitive level of quality and a cost-effective project. Again, the body parts and various body movements of Carpenter, Plumber, Welder & Masons anthropometric analysis is done to improve worker protection and avoid ergonomic risk factor. Some important physical motions like stress, strain, and overexertion, including vibration, awkward postures, forceful exertions, repetitive motion, and heavy lifting etc are conducted and workers are ranked by studying their body parts and body movement with multicriteria decision-making techniques like fuzzy AHP and a framework is designed by QFD.

LITERATURE REVIEW

Ergonomic design can be achieved but its evaluation can be varied. This varied needs and results can be further experimented and scrutinized in a very controlled environment. But the very big problem is also the relationship between eco-friendly effectiveness and restriction of autonomous values. To carry out a lot of experiments is also difficult. But with the use of new supercomputers and by running direct diagnosis one can find results by running computational experiments with a virtual set up. The basic objective of ergonomics is to fit man and machine together to improve the worker's performance, reduce stresses and fatigue at work. Application of ergonomics is very significant in an area where manual activities directly affect the physical and mental health of the employee (Parkes et al., 2005). Kushwaha and Kane (2016) have discussed that intervention of ergonomics in the workplace reduces the mismatch between man and machine and makes workplace comfortable for work. Ramos et.al.(2016) have developed a model to perform a financial and economic cost-benefit analysis related to OSH projects was developed and it was applied in the case of the prevention of WMSDs in a Portuguese hospital. An analysis of the accidents and corresponding costs has been made in six of the services of the hospital. Financial and an economic cost-benefit analysis have been made and the benefit-cost ratio (B/C) has been calculated. Charles et.al. (2012) have suggested that a brief hazard perception test could potentially be used in the assessment of drivers across the adult lifespan. Ergonomics is not only analyzed for construction, industries but also it is useful for all types of sectors.(i.e.education,health sector etc).Many modifications are also done in

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the workplace, work technique/procedures, equipment for giving the maximum comfort of humankind. Assunção et.al. (2013) have examined the effect on the prevalence of back pain of the mismatch between school furniture dimensions, backpack weight and the anthropometric characteristics of 138 adolescents (1215 years old) with differing maturity levels. These results highlight the importance to study the school environment to establish preventive programmes for back pain in youths.

Habidin et.al. have purposed to explore lean healthcare practice adopted by Malaysian healthcare industry and the relationship between lean healthcare practices and supply chain innovation performance.

Mishra et. al. (2015) have developed a framework and provide empirical evidence to support the conceptual and descriptive statements in the literature regarding the impact of human dimensions (HDs) to improve supply chain management (SCM) performance. Lyonnet et. Al. (2016) have developed a new method based on a multi-criteria approach to identify critical resources. Eight prioritization criteria involved in the company's global performance are proposed. The originality of our method is to take into account both material and human resources of the company.

Sylla et al. (2014) have surveyed PSA Peugeot Citroen factories and figured out that workstation requires high precision which results in manual stress. Liu and Li (2014) have studied the difference which is in between conventional and digital main control rooms in nuclear power plants. Factors were listed as per the task components and complexity dimensions. The study was done on three levels, namely task components, complexity dimensions and individual factors. This study can be used in improving the working standard of people working in nuclear power plant. Mohanty and Mahapatra (2014) have developed ergonomically designed office chair which will improve the comfort level of customer. Ray et al. (2015) have studied about Manual Material Handling tasks like lifting and carrying materials like bricks and heavy jack pipes at a construction site in India. They identified different risk factors and measures to prevent, eliminate and minimize their effects. Dul and Neumann (2005) have come up with a new strategy that ergonomics in addition to occupational health & safety, can also be used to evaluate business performance. Narayanan et al. (2013) have stated that Ergonomics is an important tool for a textile industry. Parida and Ray (2015) have discovered various problems in construction industry sectors like poor management of workforce, working methods, tools, and improper working conditions. Openshaw and Taylor (2006) have written ergonomics is the main factor considered while designing product. Lindroos (2009) has explained that when people deviate from their respective course of work, it results in accidents. Also, sometimes deviation leads to less productivity. Det et al. (2009) have analyzed the ergonomics challenges in minimally invasive surgery (MIS) which produced both mental and physical challenges for operating team.

However, there will be always domains and fields where people will have to perform a certain level of dirty, unpleasant work. Chedi (2015) has discussed the implementation of Ergonomics in Technical and Vocational Education and Training (TVET). Rundcrantz et al. (1991) have compared dentists with and without occupational cervicobrachial disorders with respect to mobility of shoulder & neck and posture of shoulder muscles. Ayhan (2013) has used FUZZY AHP in a Gear motor company for selecting the best supplier. Rouyendegh and Erkan (2012) have used Fuzzy Analytic Hierarchy Process for selecting academic staff by evaluating the suitability of the candidate. Garnaik et al. (2016) have implemented QFD & AHP for optimizing product design of furniture for Pankaj Enterprises, Odisha, India. Only human factor sciences can improve the work environment for such individuals. All these basic processes though driven by factors from science and technology will always have an impact on peoples' lives. Its impact on culture and civilization will come at par with the internet's and mobile telecommunication's

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impact. Through development ergonomics always has to consider the human side of the communication with machines and other technological artifacts.

RESEARCH METHODOLOGY

To avoid MSDs for workers like carpenters, masons, welders & plumbers in construction sites and for providing occupational safety in the workplace, many theories found in literatures,but still this problem remains un resolved. To find most adverse repetitive work and awkward postures which creates MSD in workers/labors, a survey conducted for construction site works categorically carpenters, masons, welders & plumbers. Their body movements studied and noted and different body parts and various body movements are compared with each other by expert analysis. Then, eventually with the help of FUZZY AHP different body parts and various body movements ranked to find which movement is maximum and the part of the body suffered due to frequent movement. Such that some technology must be developed to help workers in completion of heavy work and occupational hazards can be avoided. Body movements can be categorized to Abduction, Adduction, Circumduction, Dorsiflexion, Eversion, Flexion, Hyperextension, Inversion, Plantarflexion, Pronation, Rotation, Supination as per literature review. To study and analyze body movements of construction site workers a standard questionnaire is designed and distributed among 282 workers(i.e., Carpenter, Mason, Plumber, Welder). By personal contact, the questionnaire is explained to them and their views are collected. It is observed that Body parts involved in construction work are the ankle, arm, eye, finger, foot, knee, knuckle, leg, palm, shoulder, spine, toe, and wrist. The survey conducted particularly for 282 workers (i.e, Carpenter, Mason, Plumber, Welder) in different building construction sites of Bhubaneswar and nearby apartment construction sites among them 207 data are collected. The survey found for workers of age 20 to 40, including women workers. They worked for 8 hrs and some of them doing overtime also. To improve the ergonomic performance of workers, the ergonomics value measured for 30 factors and total performance is divided into three major categories type of workers, as per body movement and body parts. As different types of tasks like repetitive work, continuous work like brick, laying, bending, squatting, standing, stretching, Twisting, Kneeling, Stooping, Suddenly Changing Position even loading and unloading etc. occured in work place So, their body movement is categorized by an anatomical term as follows.

- **Abduction:** It is a type of movement which draws a limb away from the median plane of the body like Swinging the hands from the side of the body up to the shoulder
- **Adduction:** It is the movement of a body part toward the body's midline. A person has their arms straight out at the shoulders and brings them down to their sides, it is adduction.
- **Circumduction:** This is the Joint Movements section about the types of movements between bones at joints in the body. Circumduction is a conical movement of a limb extending from the join.
- **Dorsiflexion:** It is the Backward bending of hand or foot.
- **Eversion:** Motion denoting the movement of the sole of the foot away from the median plane.
- **Flexion:** It describes a bending movement that decreases the angle between a segment and its proximal segment. For example, bending the elbow, or clenching a hand into a fist, are examples of flexion.
- **Hyperextension:** The extension of a limb or other body part beyond its normal range of movement.

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- **Inversion:** Inversion is a movement in which the plantar surface (sole) of the foot rotates towards the mid-line of the body.
- **Planer Flexion:** It refers to extension or flexion of the foot at the ankle.
- **Pronation:** It is the way the foot rolls inward when you walk and run.
- **Rotation:** Rotation of body parts is referred to as internal or external, referring to rotation towards or away from the center of the body.
- **Supination:** It is movement in which the forearm occurs when the forearm or palm are rotated outwards. Supination of the foot refers to turning of the sole of the foot inwards.

Then Fuzzy AHP is implemented to Prioritized the workers as per their body parts movement.

The Saaty Scale is shown in Table 1. According to this method, the criteria were written in columns and in rows too. Then, the comparison was started between each criterion among other criteria. If the column criterion had greater importance than the corresponding row criterion, then the reciprocal of the Saaty Scale was assigned to it. And if the row criterion was of greater importance than the column criterion, then the normal scale was used. For example, in our case, in Table 1, Carpenter had lower importance than Mason, therefore, Mason was given 1/7, 1/8, 1/9 with respect to Carpenter as Mason was in the column and Carpenter was in a row. Similarly, when Mason was in a row and Carpenter was in column, Mason was given, 7, 8, 9 with respect to Carpenter. Let these fuzzy triangular values be known as d_{ij} (where i = no. of rows and j = no. of columns). Table 1 shows the Saaty Scale - Linguistic terms and the corresponding triangular fuzzy numbers.

Table 1. Saaty Scale-Linguistic terms and the corresponding triangular fuzzy numbers

Saaty Scale	Definition	Fuzzy Triangular Scale
1	Equally Important	(1, 1, 1)
3	Weakly Important	(2, 3, 4)
5	Fairly Important	(4, 5, 6)
7	Strongly Important	(6, 7, 8)
9	Absolutely Important	(9, 9, 9)
2	The Intermittent values between adjacent scales	(1, 2, 3)
4		(3, 4, 5)
6		(5, 6, 7)
8		(7, 8, 9)

Table 2. Input of construction site workers

	Carpenter	Mason	Plumber	Welder
Carpenter	1, 1, 1	1/7, 1/8, 1/9	1/4, 1/5, 1/6	9, 9, 9
Mason	7, 8, 9	1, 1, 1	9, 9, 9	6, 7, 8
Plumber	4, 5, 6	1/9, 1/9, 1/9	1, 1, 1	1, 1/2, 1/3
Welder	1/9, 1/9, 1/9	1/6, 1/7, 1/8	1, 2, 3	1, 1, 1

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The comparison was done between the criteria or alternatives via linguistic terms and Saaty Scale by Decision Maker as shown in Table 2-10. Table 2 Shows the fuzzy input for different workers.

Table 3 shows carpenter body movement with the motions of their body in construction site

Table 4 shows carpenter body movement of their body in construction sites.

Table 5 shows Mason body movement with the motions of their body in construction sites.

Table 6 shows masons body movement with the motions of their body in construction site.

Table 7 shows plumber's body movement with the motions of their body in construction sites.

Table 8 shows carpenter body movement with the motions of their body in construction sites.

Table 9 shows welder body movement with the motions of their body in construction site

Table 10 shows welder body movement in construction sites.

Then, the fuzzy weights were found out using the following 3 steps,

1. Vector Summation of r_i was done.
2. The Reciprocal of the summation vector was done and then was arranged in increasing order.
3. The fuzzy weights, w_i were found out

Table 11 shows the geometric means, fuzzy weights and averaged and normalized relative weight for construction workers.

Table 12 shows the geometric means, fuzzy weights and averaged and normalized relative weight for carpenter's body parts.

Table 13 shows the geometric means, fuzzy weights and averaged and normalized relative weight for carpenter's body movement.

Table 14 shows the geometric means, fuzzy weights and averaged and normalized relative weight for mason's body parts.

Table 15 shows the geometric means, fuzzy weights and averaged and normalized relative weight for mason's body movement.

Table 16 shows the geometric means, fuzzy weights and averaged and normalized relative weight for plumber's body parts

Table 17 shows the geometric means, fuzzy weights and averaged and normalized relative weight for plumber's body parts.

Table 18 shows the geometric means, fuzzy weights and averaged and normalized relative weight for welder's body parts.

Table 19 shows the geometric means, fuzzy weights and averaged and normalized relative weight for welder's body movement.

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Table 3. Carpenter body movements

Movements	Abduction	Adduction	Circumduction	Dorsiflexion	Eversion	Extension	Flexion	Hyperextension	Inversion	Plantar Flexion	Pronation	Rotation	Supination
Abduction	1, 1, 1	7, 8, 9	9, 9, 9	4, 5, 6	5, 6, 7	1/9, 1/9, 1/9	1, 1, 1	5, 6, 7	7, 8, 9	6, 7, 8	1, 1, 1	5, 6, 7	1, 1, 1
Adduction	1/7, 1/8, 1/9	1, 1, 1	6, 7, 8	7, 8, 9	5, 6, 7	1/7, 1/8, 1/9	1, 1, 1	1/4, 1/5, 1/6	1, 2, 3	5, 6, 7	1, 1, 1	7, 8, 9	1, 1, 1
Circumduction	1/9, 1/9, 1/9	1/6, 1/7, 1/8	1, 1, 1	1/4, 1/5, 1/6	2, 3, 4	1/5, 1/6, 1/7	1/5, 1/6, 1/7	1/9, 1/9, 1/9	3, 4, 5	1/4, 1/5, 1/6	1/6, 1/7, 1/8	1/6, 1/7, 1/8	1/7, 1/8, 1/9
Dorsiflexion	1/4, 1/5, 1/6	1/7, 1/8, 1/9	4, 5, 6	1, 1, 1	1, 1, 1	1/6, 1/7, 1/8	1/7, 1/8, 1/9	1/7, 1/8, 1/9	1, 1, 1	1, 1, 1	1/4, 1/5, 1/6	2, 3, 4	1/5, 1/6, 1/7
Eversion	1/5, 1/6, 1/7	1/5, 1/6, 1/7	1/2, 1/3, 1/4	1, 1, 1	1, 1, 1	1, 2, 3	2, 3, 4	1, 1/2, 1/3	1, 1, 1	1, 2, 3	1/5, 1/6, 1/7	1, 1/2, 1/3	1/6, 1/7, 1/8
Extension	9, 9, 9	7, 8, 9	5, 6, 7	6, 7, 8	1, 1/2, 1/3	1, 1, 1	1, 2, 3	1, 1/2, 1/3	1/2, 1/3, 1/4	7, 8, 9	1/6, 1/7, 1/8	4, 5, 6	1/6, 1/7, 1/8
Flexion	1, 1, 1	1, 1, 1	5, 6, 7	7, 8, 9	1/2, 1/3, 1/4	1, 1/2, 1/3	1, 1, 1	1, 1, 1	1/3, 1/4, 1/5	6, 7, 8	3, 4, 5	7, 8, 9	4, 5, 6
Hyperextension	1/5, 1/6, 1/7	4, 5, 6	9, 9, 9	7, 8, 9	1, 2, 3	1, 2, 3	1, 1, 1	1, 1, 1	6, 7, 8	7, 8, 9	1/5, 1/6, 1/7	2, 3, 4	1/5, 1/6, 1/7
Inversion	1/7, 1/8, 1/9	1, 1/2, 1/3	1/3, 1/4, 1/5	1, 1, 1	1, 1, 1	2, 3, 4	3, 4, 5	1/6, 1/7, 1/8	1, 1, 1	2, 3, 4	1/6, 1/7, 1/8	5, 6, 7	1/7, 1/8, 1/9
Plantar Flexion	1/6, 1/7, 1/8	1/5, 1/6, 1/7	4, 5, 6	1, 1, 1	1, 1/2, 1/3	1/7, 1/8, 1/9	1/6, 1/7, 1/8	1/7, 1/8, 1/9	1/2, 1/3, 1/4	1, 1, 1	1/7, 1/8, 1/9	1/2, 1/3, 1/4	1/7, 1/8, 1/9
Pronation	1, 1, 1	1, 1, 1	6, 7, 8	4, 5, 6	5, 6, 7	6, 7, 8	1/3, 1/4, 1/5	5, 6, 7	6, 7, 8	7, 8, 9	1, 1, 1	7, 8, 9	1, 1, 1
Rotation	1/5, 1/6, 1/7	1/7, 1/8, 1/9	6, 7, 8	1/2, 1/3, 1/4	1, 2, 3	1/4, 1/5, 1/6	1/7, 1/8, 1/9	1/2, 1/3, 1/4	1/5, 1/6, 1/7	2, 3, 4	1, 1, 1	1, 1, 1	1/9, 1/9, 1/9
Supination	1, 1, 1	1, 1, 1	7, 8, 9	5, 6, 7	6, 7, 8	6, 7, 8	1/4, 1/5, 1/6	5, 6, 7	7, 8, 9	7, 8, 9	1, 1, 1	9, 9, 9	1, 1, 1

Table 4. Carpenter body parts

Body Part	Ankle	Arm	Eye	Finger	Foot	Knee	Knuckle	Leg	Palm	Shoulder	Spine	Toe	Wrist
Ankle	1, 1, 1	1/7, 1/8, 1/9	5, 6, 7	1/6, 1/7, 1/8	4, 5, 6	1, 1, 1	1/9, 1/9, 1/9	1/6, 1/7, 1/8	1/7, 1/8, 1/9	1/9, 1/9, 1/9	1/7, 1/8, 1/9	9, 9, 9	1/5, 1/6, 1/7
Arm	7, 8, 9	1, 1, 1	6, 7, 8	1, 1, 1	4, 5, 6	5, 6, 7	2, 3, 4	3, 4, 5	1, 1, 1	4, 5, 6	1/6, 1/7, 1/8	7, 8, 9	1/5, 1/6, 1/7
Eye	1/5, 1/6, 1/7	1/6, 1/7, 1/8	1, 1, 1	1/4, 1/5, 1/6	1/2, 1/3, 1/4	1/4, 1/5, 1/6	1/3, 1/4, 1/5	1/3, 1/4, 1/5	1/5, 1/6, 1/7	1/9, 1/9, 1/9	1/7, 1/8, 1/9	1/2, 1/3, 1/4	1, 2, 3
Finger	6, 7, 8	1, 1, 1	4, 5, 6	1, 1, 1	6, 7, 8	7, 8, 9	1, 1, 1	4, 5, 6	2, 3, 4	1/5, 1/6, 1/7	1, 1, 1	9, 9, 9	1/5, 1/6, 1/7
Foot	1/4, 1/5, 1/6	1/4, 1/5, 1/6	2, 3, 4	1/6, 1/7, 1/8	1, 1, 1	7, 8, 9	1/5, 1/6, 1/7	1, 1, 1	1/4, 1/5, 1/6	1/6, 1/7, 1/8	1/6, 1/7, 1/8	7, 8, 9	1/2, 1/3, 1/4
Knee	1, 1, 1	1/5, 1/6, 1/7	4, 5, 6	1/7, 1/8, 1/9	1/7, 1/8, 1/9	1, 1, 1	1/6, 1/7, 1/8	1/9, 1/9, 1/9	1/7, 1/8, 1/9	1/4, 1/5, 1/6	1/6, 1/7, 1/8	5, 6, 7	1/3, 1/4, 1/5
Knuckle	9, 9, 9	1/2, 1/3, 1/4	3, 4, 5	1, 1, 1	5, 6, 7	6, 7, 8	1, 1, 1	1/4, 1/5, 1/6	1/5, 1/6, 1/7	1/6, 1/7, 1/8	1/9, 1/9, 1/9	6, 7, 8	1, 1, 1
Leg	6, 7, 8	1/3, 1/4, 1/5	3, 4, 5	1/2, 1/3, 1/4	1, 1, 1	9, 9, 9	4, 5, 6	1, 1, 1	1/6, 1/7, 1/8	1/5, 1/6, 1/7	1, 1, 1	7, 8, 9	3, 4, 5
Palm	7, 8, 9	1, 1, 1	5, 6, 7	5, 6, 7	4, 5, 6	7, 8, 9	5, 6, 7	6, 7, 8	1, 1, 1	1/4, 1/5, 1/6	1, 1, 1	7, 8, 9	1, 1, 1
Shoulder	9, 9, 9	1/4, 1/5, 1/6	9, 9, 9	1, 1, 1	6, 7, 8	4, 5, 6	6, 7, 8	5, 6, 7	4, 5, 6	1, 1, 1	1/9, 1/9, 1/9	6, 7, 8	1, 1, 1
Spine	7,8, 9	7, 8	8, 9	1/9	6,8	6,8	9,9	1,1	1,1	9,9	1, 1	7,9	6, 7,8
Toe	1/9, 1/9, 1/9	1/7, 1/8, 1/9	2, 3, 4	5, 6, 7	1/7, 1/8, 1/9	1/5, 1/6, 1/7	1/6, 1/7, 1/8	1/7, 1/8, 1/9	1/7, 1/8, 1/9	1/6, 1/7, 1/8	1/7, 1/8, 1/9	1, 1, 1	1/6, 1/7, 1/8
Wrist	5, 6, 7	5, 6, 7	1, 1/2, 1/3		2, 3, 4	3, 4, 5	1, 1, 1	1/3, 1/4, 1/5	1, 1, 1	1, 1, 1	1/6, 1/7, 1/8	6, 7, 8	1, 1, 1

Table 5. Mason body movements

Movements	Abduction	Adduction	Circumduction	Dorsiflexion	Eversion	Extension	Flexion	Hyperextension	Inversion	Plantar Flexion	Pronation	Rotation	Supination
Abduction	1, 1, 1	5, 6, 7	1, 1/2, 1/3	1/5, 1/6, 1/7	1/6, 1/7, 1/8	1, 1, 1	1, 1, 1	1/7, 1/8, 1/9	1/6, 1/7, 1/8	1/7, 1/8, 1/9	1/4, 1/5, 1/6	1, 1, 1	1/3, 1/4, 1/5
Adduction	1/5, 1/6, 1/7	1, 1, 1	1/5, 1/6, 1/7	1/7, 1/8, 1/9	1/2, 1/3, 1/4	1, 1, 1	1, 1, 1	1/3, 1/4, 1/5	1/2, 1/3, 1/4	1/5, 1/6, 1/7	1/3, 1/4, 1/5	1/6, 1/7, 1/8	1/5, 1/6, 1/7
Circumduction	1, 2, 3	5, 6, 7	1, 1, 1	1, 1, 1	3, 4, 5	6, 7, 8	6, 7, 8	1, 1, 1	4, 5, 6	5, 6, 7	6, 7, 8	1, 1, 1	1, 1, 1
Dorsiflexion	5, 6, 7	7, 8, 9	1, 1, 1	1, 1, 1	1, 1, 1	5, 6, 7	5, 6, 7	3, 4, 5	1, 1, 1	1, 1, 1	1, 1, 1	1, 1/2, 1/3	1, 1/2, 1/3
Eversion	6, 7, 8	2, 3, 4	1/3, 1/4, 1/5	1, 1, 1	1, 1, 1	6, 7, 8	6, 7, 8	1/6, 1/7, 1/8	1, 1, 1	1, 1, 1	1, 1, 1	1/2, 1/3, 1/4	1/2, 1/3, 1/4
Extension	1, 1, 1	1, 1, 1	1/6, 1/7, 1/8	1/5, 1/6, 1/7	1/6, 1/7, 1/8	1, 1, 1	1, 1, 1	1, 1, 1	1/5, 1/6, 1/7	1, 1, 1	1, 1, 1	1/6, 1/7, 1/8	1/6, 1/7, 1/8
Flexion	1, 1, 1	1, 1, 1	1/6, 1/7, 1/8	1/5, 1/6, 1/7	1/6, 1/7, 1/8	1, 1, 1	1, 1, 1	1/4, 1/5, 1/6	1/5, 1/6, 1/7	1, 1, 1	1, 1, 1	1/5, 1/6, 1/7	1/5, 1/6, 1/7
Hyperextension	7, 8, 9	3, 4, 5	1, 1, 1	1/3, 1/4, 1/5	6, 7, 8	1, 1, 1	4, 5, 6	1, 1, 1	1, 1, 1	5, 6, 7	1, 1, 1	6, 7, 8	6, 7, 8
Inversion	6, 7, 8	2, 3, 4	1/4, 1/5, 1/6	1, 1, 1	1, 1, 1	5, 6, 7	5, 6, 7	1, 1, 1	1, 1, 1	1, 1, 1	1, 1, 1	1/3, 1/4, 1/5	1/3, 1/4, 1/5
Plantar Flexion	7, 8, 9	5, 6, 7	1/5, 1/6, 1/7	1, 1, 1	1, 1, 1	1, 1, 1	1, 1, 1	1/5, 1/6, 1/7	1, 1, 1	1, 1, 1	1, 1, 1	1/5, 1/6, 1/7	1/5, 1/6, 1/7
Pronation	4, 5, 6	3, 4, 5	1/6, 1/7, 1/8	1, 1, 1	1, 1, 1	1, 1, 1	1, 1, 1	1, 1, 1	1, 1, 1	1, 1, 1	1, 1, 1	2, 3, 4	2, 3, 4
Rotation	1, 1, 1	6, 7, 8	1, 1, 1	1, 2, 3	2, 3, 4	6, 7, 8	5, 6, 7	1/6, 1/7, 1/8	3, 4, 5	5, 6, 7	1/2, 1/3, 1/4	1, 1, 1	1/2, 1/3, 1/4
Supination	3, 4, 5	5, 6, 7	1, 1, 1	1, 2, 3	2, 3, 4	6, 7, 8	5, 6, 7	1/6, 1/7, 1/8	3, 4, 5	5, 6, 7	1/2, 1/3, 1/4	2, 3, 4	1, 1, 1

Table 6. Mason body parts

Body Part	Ankle	Arm	Eye	Finger	Foot	Knee	Knuckle	Leg	Palm	Shoulder	Spine	Toe	Wrist
Ankle	1, 1, 1	5, 6, 7	6, 7, 8	6, 7, 8	1, 1, 1	1, 1, 1	7, 8, 9	1, 1, 1	5, 6, 7	1/4, 1/5, 1/6	1/9, 1/9, 1/9	1, 1, 1	1, 1, 1
Arm	1/5, 1/6, 1/7	1, 1, 1	1, 1, 1	1, 1, 1	1, 1, 1	1, 1, 1	4, 5, 6	1, 1, 1	6, 7, 8	1/3, 1/4, 1/5	1/9, 1/9, 1/9	4, 5, 6	2, 3, 4
Eye	1/6, 1/7, 1/8	1, 1, 1	1, 1, 1	1/5, 1/6, 1/7	1/4, 1/5, 1/6	1/4, 1/5, 1/6	1, 1, 1	1/5, 1/6, 1/7	1, 1, 1	1/5, 1/6, 1/7	1/9, 1/9, 1/9	1/4, 1/5, 1/6	1/2, 1/3, 1/4
Finger	1/6, 1/7, 1/8	1, 1, 1	5, 6, 7	1, 1, 1	1/6, 1/7, 1/8	1/6, 1/7, 1/8	1, 1, 1	1/7, 1/8, 1/9	1, 1, 1	1/7, 1/8, 1/9	1/9, 1/9, 1/9	1/6, 1/7, 1/8	1, 1, 1
Foot	1, 1, 1	1, 1, 1	4, 5, 6	6, 7, 8	1, 1, 1	1, 1, 1	6, 7, 8	1, 1, 1	5, 6, 7	1/3, 1/4, 1/5	1/9, 1/9, 1/9	1, 1, 1	4, 5, 6
Knee	1, 1, 1	1, 1, 1	4, 5, 6	6, 7, 8	1, 1, 1	1, 1, 1	9, 9, 9	1, 1, 1	6, 7, 8	3, 4, 5	1/9, 1/9, 1/9	1, 1, 1	5, 6, 7
Knuckle	1/7, 1/8, 1/9	1/4, 1/5, 1/6	1, 1, 1	1, 1, 1	1/6, 1/7, 1/8	1/9, 1/9, 1/9	1, 1, 1	1/9, 1/9, 1/9	1, 1, 1	1/6, 1/7, 1/8	1/9, 1/9, 1/9	1/5, 1/6, 1/7	1/2, 1/3, 1/4
Leg	1, 1, 1	1, 1, 1	5, 6, 7	7, 8, 9	1, 1, 1	1, 1, 1	9, 9, 9	1, 1, 1	6, 7, 8	1, 1, 1	1/9, 1/9, 1/9	1, 1, 1	6, 7, 8
Palm	1/5, 1/6, 1/7	1/6, 1/7, 1/8	1, 1, 1	1, 1, 1	1/5, 1/6, 1/7	1/6, 1/7, 1/8	1, 1, 1	1/6, 1/7, 1/8	1, 1, 1	1/9, 1/9, 1/9	1/9, 1/9, 1/9	1/7, 1/8, 1/9	1, 1, 1
Shoulder	4, 5, 6	3, 4, 5	5, 6, 7	7, 8, 9	3, 4, 5	1/3, 1/4, 1/5	6, 7, 8	1, 1, 1	9, 9, 9	1, 1, 1	1/9, 1/9, 1/9	6, 7, 8	7, 8, 9
Spine	9,9, 9	9,9	9,9	9, 9,9	9, 9,9	9, 9,9	9, 9,9	9, 9,9	9, 9,9	9, 9,9	1, 1,1	9, 9,9	9, 9,9
Toe	1, 1, 1	1/4, 1/5, 1/6	4, 5, 6	6, 7, 8	1, 1, 1	1, 1, 1	5, 6, 7	1, 1, 1	7, 8, 9	1/6, 1/7, 1/8	1/9, 1/9, 1/9	1, 1, 1	1, 1, 1
Wrist	1, 1, 1	1/2, 1/3, 1/4	2, 3, 4	1, 1, 1	1/4, 1/5, 1/6	1/5, 1/6, 1/7	2, 3, 4	1/6, 1/7, 1/8	1, 1, 1	1/7, 1/8, 1/9	1/9, 1/9, 1/9	1, 1, 1	1, 1, 1

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Table 7. Plumber body movements

Movements	Abduction	Adduction	Circumduction	Dorsiflexion	Eversion	Extension	Flexion	Hyperextension	Inversion	Plantar Flexion	Pronation	Rotation	Supination
Abduction	1, 1, 1	3, 4, 5	1/2, 1/3, 1/4	5, 6, 7	6, 7, 8	1/2, 1/3, 1/4	1/2, 1/3, 1/4	1, 1, 1	6, 7, 8	5, 6, 7	1/7, 1/8, 1/9	1/2, 1/3, 1/4	1/7, 1/8, 1/9
Adduction	1/3, 1/4, 1/5	1, 1, 1	1/3, 1/4, 1/5	4, 5, 6	5, 6, 7	1/3, 1/4, 1/5	1/3, 1/4, 1/5	1, 1, 1	5, 6, 7	4, 5, 6	1/7, 1/8, 1/9	1/3, 1/4, 1/5	1/7, 1/8, 1/9
Circumduction	2, 3, 4	3, 4, 5	1, 1, 1	5, 6, 7	6, 7, 8	1/2, 1/3, 1/4	1/2, 1/3, 1/4	1, 1, 1	6, 7, 8	5, 6, 7	1/7, 1/8, 1/9	1/2, 1/3, 1/4	1/7, 1/8, 1/9
Dorsiflexion	1/5, 1/6, 1/7	1/4, 1/5, 1/6	1/5, 1/6, 1/7	1, 1, 1	1, 1/2, 1/3	1/9, 1/9, 1/9	1/9, 1/9, 1/9	1/4, 1/5, 1/6	1, 1/2, 1/3	1, 1, 1	1/9, 1/9, 1/9	1/4, 1/5, 1/6	1/9, 1/9, 1/9
Eversion	1/6, 1/7, 1/8	1/5, 1/6, 1/7	1/6, 1/7, 1/8	1, 2, 3	1, 1, 1	1/9, 1/9, 1/9	1/9, 1/9, 1/9	1/4, 1/5, 1/6	1, 1, 1	1, 2, 3	1/9, 1/9, 1/9	1/4, 1/5, 1/6	1/9, 1/9, 1/9
Extension	2, 3, 4	3, 4, 5	2, 3, 4	9, 9, 9	9, 9, 9	1, 1, 1	1, 1, 1	4, 5, 6	6, 7, 8	1/9, 1/9, 1/9	1/3, 1/4, 1/5	3, 4, 5	1/3, 1/4, 1/5
Flexion	2, 3, 4	3, 4, 5	2, 3, 4	9, 9, 9	9, 9, 9	1, 1, 1	1, 1, 1	4, 5, 6	6, 7, 8	1/9, 1/9, 1/9	1/3, 1/4, 1/5	3, 4, 5	1/3, 1/4, 1/5
Hyperextension	1, 1, 1	1, 1, 1	1, 1, 1	4, 5, 6	4, 5, 6	1/4, 1/5, 1/6	1/4, 1/5, 1/6	1, 1, 1	2, 3, 4	2, 3, 4	1/5, 1/6, 1/7	1, 1/2, 1/3	1/5, 1/6, 1/7
Inversion	1/6, 1/7, 1/8	1/5, 1/6, 1/7	1/6, 1/7, 1/8	1, 2, 3	1, 1, 1	1/6, 1/7, 1/8	1/6, 1/7, 1/8	1/2, 1/3, 1/4	1, 1, 1	1, 2, 3	1/9, 1/9, 1/9	1/4, 1/5, 1/6	1/9, 1/9, 1/9
Plantar Flexion	1/5, 1/6, 1/7	1/4, 1/5, 1/6	1/5, 1/6, 1/7	1, 1, 1	1, 1/2, 1/3	9, 9, 9	9, 9, 9	1/2, 1/3, 1/4	1, 1/2, 1/3	1, 1, 1	1/9, 1/9, 1/9	1/4, 1/5, 1/6	1/9, 1/9, 1/9
Pronation	8, 9	78,9	7, 89	9, 99	9, 99	3, 45	3, 45	5, 67	9, 99	9, 99	1, 11	4, 56	1, 11
Rotation	2, 3, 4	3, 4, 5	2, 3, 4	4, 5, 6	4, 5, 6	1/3, 1/4, 1/5	1/3, 1/4, 1/5	1, 2, 3	4, 5, 6	4, 5, 6	1/4, 1/5, 1/6	1, 1, 1	4, 5, 6
Supination	7, 8, 9	7, 8, 9	7, 8, 9	9, 9, 9	9, 9, 9	3, 4, 5	3, 4, 5	5, 6, 7	9, 9, 9	9, 9, 9	1, 1, 1	1/4, 1/5, 1/6	1, 1, 1

Table 8. Plumber body parts

Body Part	Ankle	Arm	Eye	Finger	Foot	Knee	Knuckle	Leg	Palm	Shoulder	Spine	Toe	Wrist
Ankle	1, 1, 1	1/9, 1/9, 1/9	1/2, 1/3, 1/4	1/9, 1/9, 1/9	1, 1, 1	1/2, 1/3, 1/4	1/9, 1/9, 1/9	1/2, 1/3, 1/4	1/4, 1/5, 1/6	1/6, 1/7, 1/8	1/4, 1/5, 1/6	1, 1, 1	1/6, 1/7, 1/8
Arm	9, 9, 9	1, 1, 1	6, 7, 8	1, 1, 1	9, 9, 9	6, 7, 8	1, 1, 1	6, 7, 8	1, 1, 1	2, 3, 4	2, 3, 4	9, 9, 9	1, 1, 1
Eye	2, 3, 4	1/6, 1/7, 1/8	1, 1, 1	1/6, 1/7, 1/8	3, 4, 5	1, 2, 3	1/5, 1/6, 1/7	3, 4, 5	1/6, 1/7, 1/8	1/6, 1/7, 1/8	1/6, 1/7, 1/8	3, 4, 5	1/7, 1/8, 1/9
Finger	9, 9, 9	1, 1, 1	6, 7, 8	1, 1, 1	9, 9, 9	9, 9, 9	1, 1, 1	5, 6, 7	1, 1, 1	1, 1, 1	4, 5, 6	9, 9, 9	1, 1, 1
Foot	1, 1, 1	1/9, 1/9, 1/9	1/3, 1/4, 1/5	1/9, 1/9, 1/9	1, 1, 1	1, 1/2, 1/3	1/9, 1/9, 1/9	1/2, 1/3, 1/4	1/9, 1/9, 1/9	1/7, 1/8, 1/9	1/5, 1/6, 1/7	1, 1, 1	1/9, 1/9, 1/9
Knee	2, 3, 4	1/6, 1/7, 1/8	1, 1/2, 1/3	1/9, 1/9, 1/9	1, 2, 3	1, 1, 1	1/7, 1/8, 1/9	1, 1, 1	1/7, 1/8, 1/9	1/5, 1/6, 1/7	1/3, 1/4, 1/5	2, 3, 4	1/9, 1/9, 1/9
Knuckle	9, 9, 9	1, 1, 1	5, 6, 7	1, 1, 1	9, 9, 9	7, 8, 9	1, 1, 1	7, 8, 9	1, 1, 1	3, 4, 5	4, 5, 6	9, 9, 9	1, 1, 1
Leg	2, 3, 4	1/6, 1/7, 1/8	1/3, 1/4, 1/5	1/5, 1/6, 1/7	2, 3, 4	1, 1, 1	1/7, 1/8, 1/9	1, 1, 1	1/9, 1/9, 1/9	1/6, 1/7, 1/8	1/4, 1/5, 1/6	1, 2, 3	1/7, 1/8, 1/9
Palm	4, 5, 6	1, 1, 1	6, 7, 8	1, 1, 1	9, 9, 9	7, 8, 9	1, 1, 1	9, 9, 9	1, 1, 1	2, 3, 4	4, 5, 6	9, 9, 9	1, 1/2, 1/3
Shoulder	6, 7, 8	1/2, 1/3, 1/4	6, 7, 8	1, 1, 1	7, 8, 9	5, 6, 7	1/3, 1/4, 1/5	6, 7, 8	1/2, 1/3, 1/4	1, 1, 1	2, 3, 4	5, 6, 7	1/4, 1/5, 1/6
Spine	4, 5, 6	1/2, 1/3, 1/4	6, 7, 8	1/4, 1/5, 1/6	5, 6, 7	3, 4, 5	1/4, 1/5, 1/6	4, 5, 6	1/4, 1/5, 1/6	1/2, 1/3, 1/4	1, 1, 1	3, 4, 5	1/3, 1/4, 1/5
Toe	1, 1, 1	1/9, 1/9, 1/9	1/3, 1/4, 1/5	1/9, 1/9, 1/9	1, 1, 1	1/2, 1/3, 1/4	1/9, 1/9, 1/9	1, 1/2, 1/3	1/9, 1/9, 1/9	1/5, 1/6, 1/7	1/3, 1/4, 1/5	1, 1, 1	9, 9, 9
Wrist	6, 7, 8	1, 1, 1	7, 8, 9	1, 1, 1	9, 9, 9	9, 9, 9	1, 1, 1	7, 8, 9	1, 2, 3	4, 5, 6	3, 4, 5	1/9, 1/9, 1/9	1, 1, 1

Table 9. Welder body movements

Movements	Abduction	Adduction	Circumduction	Dorsiflexion	Eversion	Extension	Flexion	Hyperextension	Inversion	Plantar Flexion	Pronation	Rotation	Supination
Abduction	1,1, 1	1, 1,1	2, 3,4	2, 3,4	4, 5,6	4, 5,6	2, 3,4	9, 9,9	6, 7,8	4, 5,6	6, 7,8	6, 7,8	4, 5,6
Adduction	1,1, 1	1,1, 1	2,3, 4	2,3, 4	4,5, 6	4,5, 6	2,3, 4	9,9, 9	6,7, 8	4,5, 6	6,7, 8	6,7, 8	4, 5,6
Circumduction	1/2, 1/3, 1/4	1/2, 1/3, 1/4	1, 1, 1	6, 7, 8	2, 3, 4	4, 5, 6	6, 7, 8	9, 9, 9	6, 7, 8	6, 7, 8	4, 5, 6	2, 3, 4	4, 5, 6
Dorsiflexion	1/2, 1/3, 1/4	1/2, 1/3, 1/4	1/6, 1/7, 1/8	1, 1, 1	1, 1, 1	1/2, 1/3, 1/4	1/4, 1/5, 1/6	9, 9, 9	1/2, 1/3, 1/4	1/6, 1/7, 1/8	1/4, 1/5, 1/6	1/6, 1/7, 1/8	1/2, 1/3, 1/4
Eversion	1/4, 1/5, 1/6	1/4, 1/5, 1/6	1/2, 1/3, 1/4	1, 1, 1	1, 1, 1	1/4, 1/5, 1/6	1/4, 1/5, 1/6	9, 9, 9	1/6, 1/7, 1/8	1/2, 1/3, 1/4	1/4, 1/5, 1/6	1/2, 1/3, 1/4	1/6, 1/7, 1/8
Extension	1/4, 1/5, 1/6	1/4, 1/5, 1/6	1/4, 1/5, 1/6	2, 3, 4	4, 5, 6	1, 1, 1	6, 7, 8	9, 9, 9	4, 5, 6	2, 3, 4	6, 7, 8	4, 5, 6	2, 3, 4
Flexion	1/2, 1/3, 1/4	1/2, 1/3, 1/4	1/6, 1/7, 1/8	4, 5, 6	4, 5, 6	1/6, 1/7, 1/8	1, 1, 1	9, 9, 9	2, 3, 4	1, 1, 1	4, 5, 6	6, 7, 8	2, 3, 4
Hyperextension	1/9, 1/9, 1/9	1/9, 1/9, 1/9	1/9, 1/9, 1/9	1/9, 1/9, 1/9	1/9, 1/9, 1/9	1/9, 1/9, 1/9	1/9, 1/9, 1/9	1, 1, 1	1/6, 1/7, 1/8	1/4, 1/5, 1/6	1/9, 1/9, 1/9	1/9, 1/9, 1/9	1/9, 1/9, 1/9
Inversion	1/6, 1/7, 1/8	1/6, 1/7, 1/8	1/6, 1/7, 1/8	2, 3, 4	6, 7, 8	1/4, 1/5, 1/6	1/2, 1/3, 1/4	6, 7, 8	1, 1, 1	2, 3, 4	6, 7, 8	4, 5, 6	4, 5, 6
Plantar Flexion	1/4, 1/5, 1/6	1/4, 1/5, 1/6	1/6, 1/7, 1/8	6, 7, 8	2, 3, 4	1/2, 1/3, 1/4	1, 1, 1	4, 5, 6	1/2, 1/3, 1/4	1, 1, 1	4, 5, 6	6, 7, 8	6, 7, 8
Pronation	1/6, 1/7, 1/8	1/6, 1/7, 1/8	1/4, 1/5, 1/6	4, 5, 6	4, 5, 6	1/6, 1/7, 1/8	1/4, 1/5, 1/6	9, 9, 9	1/6, 1/7, 1/8	1/4, 1/5, 1/6	1, 1, 1	1/2, 1/3, 1/4	1/6, 1/7, 1/8
Rotation	1/6, 1/7, 1/8	1/6, 1/7, 1/8	1/2, 1/3, 1/4	6, 7, 8	2, 3, 4	1/4, 1/5, 1/6	1/6, 1/7, 1/8	9, 9, 9	1/4, 1/5, 1/6	1/6, 1/7, 1/8	2, 3, 4	1, 1, 1	6, 7, 8
Supination	1/4, 1/5, 1/6	1/4, 1/5, 1/6	1/4, 1/5, 1/6	2, 3, 4	6, 7, 8	1/2, 1/3, 1/4	1/2, 1/3, 1/4	9, 9, 9	1/4, 1/5, 1/6	1/6, 1/7, 1/8	6, 7, 8	1/6, 1/7, 1/8	1, 1, 1

Table 10. Welder body parts

Body Part	Ankle	Arm	Eye	Finger	Foot	Knee	Knuckle	Leg	Palm	Shoulder	Spine	Toe	Wrist
Ankle	1, 1, 1	9, 9, 9	1/9, 1/9, 1/9	9, 9, 9	1, 1, 1	1, 1, 1	9, 9, 9	1, 1, 1	9, 9, 9	2, 3, 4	4, 5, 6	1, 1, 1	4, 5, 6
Arm	1/9, 1/9, 1/9	1, 1, 1	2, 3, 4	4, 5, 6	1/9, 1/9, 1/9	1/9, 1/9, 1/9	1, 1, 1	1/9, 1/9, 1/9	2, 3, 4	4, 5, 6	4, 5, 6	4, 5, 6	1, 1, 1
Eye	9, 9, 9	1/2, 1/3, 1/4	1, 1, 1	9, 9, 9	9, 9, 9	9, 9, 9	9, 9, 9	9, 9, 9	9, 9, 9	9, 9, 9	9, 9, 9	9, 9, 9	9, 9, 9
Finger	1/9, 1/9, 1/9	1/4, 1/5, 1/6	1/9, 1/9, 1/9	1, 1, 1	1/4, 1/5, 1/6	1/6, 1/7, 1/8	2, 3, 4	1/9, 1/9, 1/9	1, 1, 1	4, 5, 6	1/2, 1/3, 1/4	1, 1, 1	1, 1, 1
Foot	1, 1, 1	9, 9, 9	1/9, 1/9, 1/9	4, 5, 6	1, 1, 1	1, 1, 1	6, 7, 8	1, 1, 1	6, 7, 8	6, 7, 8	4, 5, 6	6, 7, 8	6, 7, 8
Knee	1, 1, 1	9, 9, 9	1/9, 1/9, 1/9	6, 7, 8	1, 1, 1	1, 1, 1	6, 7, 8	1, 1, 1	6, 7, 8	4, 5, 6	4, 5, 6	1, 1, 1	6, 7, 8
Knuckle	1/9, 1/9, 1/9	1, 1, 1	1/9, 1/9, 1/9	1/2, 1/3, 1/4	1/6, 1/7, 1/8	1/6, 1/7, 1/8	1, 1, 1	1/9, 1/9, 1/9	1, 1, 1	2, 3, 4	1/9, 1/9, 1/9	1/6, 1/7, 1/8	1/2, 1/3, 1/4
Leg	1, 1, 1	9, 9, 9	1/9, 1/9, 1/9	9, 9, 9	1, 1, 1	1, 1, 1	9, 9, 9	1, 1, 1	9, 9, 9	9, 9, 9	9, 9, 9	1, 1, 1	9, 9, 9
Palm	1/9, 1/9, 1/9	1/2, 1/3, 1/4	1/9, 1/9, 1/9	1, 1, 1	1/6, 1/7, 1/8	1/6, 1/7, 1/8	1, 1, 1	1/9, 1/9, 1/9	1, 1, 1	1/6, 1/7, 1/8	1/6, 1/7, 1/8	1/2, 1/3, 1/4	1, 1, 1
Shoulder	1/2, 1/3, 1/4	1/4, 1/5, 1/6	1/9, 1/9, 1/9	1/4, 1/5, 1/6	1/6, 1/7, 1/8	1/4, 1/5, 1/6	1/2, 1/3, 1/4	1/9, 1/9, 1/9	6, 7, 8	1, 1, 1	1/6, 1/7, 1/8	2, 3, 4	2, 3, 4
Spine	1/4, 1/5, 1/6	1/4, 1/5, 1/6	1/9, 1/9, 1/9	2, 3, 4	1/4, 1/5, 1/6	1/4, 1/5, 1/6	9, 9, 9	1/9, 1/9, 1/9	6, 7, 8	6, 7, 8	1, 1, 1	2, 3, 4	4, 5, 6
Toe	1, 1, 1	1/4, 1/5, 1/6	1/9, 1/9, 1/9	1, 1, 1	1/6, 1/7, 1/8	1, 1, 1	6, 7, 8	1, 1, 1	2, 3, 4	1/2, 1/3, 1/4	1/2, 1/3, 1/4	1, 1, 1	2, 3, 4
Wrist	1/4, 1/5, 1/6	1, 1, 1	1/9, 1/9, 1/9	1, 1, 1	1/6, 1/7, 1/8	1/6, 1/7, 1/8	2, 3, 4	1/9, 1/9, 1/9	1, 1, 1	1/2, 1/3, 1/4	1/4, 1/5, 1/6	1/2, 1/3, 1/4	1, 1, 1

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Table 11. Geometric means, fuzzy weights and averaged and normalized relative weight for people

Type of Work	r_i			w_i			M	N
Carpenter	0.753015	0.688725	0.638959	0.110369	0.10475	0.100659	0.10526	0.105077
Mason	4.409334	4.738137	5.045379	0.646276	0.720635	0.794832	0.720581	0.719332
Plumber	0.816476	0.725961	0.686555	0.119671	0.110413	0.108158	0.112747	0.112552
Welder	0.05407	0.064202	0.071173	0.05407	0.064202	0.071173	0.063149	0.063039
Total	6.347728	6.574951	6.822682					
Reciprocal of Totals	0.157537	0.152092	0.14657					
Increasing order of Reciprocals	0.14657	0.152092	0.157537					

Table 12. Geometric means, fuzzy weights and averaged and normalized relative weight for carpenter's body parts

Body Part	r_i	w_i			M	N		
Ankle	0.455206	0.438494	0.423937	0.022952	0.023067	0.023367	0.023129	0.023067
Arm	1.916479	2.135509	2.326009	0.096632	0.112337	0.128207	0.112392	0.112095
Eye	0.303294	0.264249	0.234728	0.015293	0.013901	0.012938	0.014044	0.014007
Finger	1.846602	1.983445	2.097859	0.093108	0.104337	0.115632	0.104359	0.104084
Foot	0.572477	0.528189	0.49414	0.028865	0.027785	0.027237	0.027962	0.027888
Knee	0.376005	0.348247	0.326352	0.018959	0.018319	0.017988	0.018422	0.018373
Knuckle	1.064374	1.049207	1.040109	0.053667	0.055193	0.05733	0.055397	0.05525
Leg	1.322357	1.346924	1.366415	0.066675	0.070854	0.075315	0.070948	0.070761
Palm	2.184028	2.27208	2.362587	0.110122	0.119521	0.130223	0.119955	0.119639
Shoulder	2.55164	2.766337	2.962681	0.128657	0.145521	0.1633	0.145826	0.145441
Spine	3.812943	4.123273	4.414588	0.192254	0.216901	0.243328	0.217494	0.21692
Toe	0.207986	0.193956	0.181578	0.010487	0.010203	0.010008	0.010233	0.010206
Wrist	1.529186	1.560015	1.60188	0.077104	0.082063	0.088294	0.082487	0.082269
Total	18.142578	19.009923	19.832862					
Reciprocal of Totals	0.055119	0.052604	0.050421					
Increasing order of Reciprocals	0.050421	0.052604	0.055119					

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Table 13. Geometric means, fuzzy weights and averaged and normalized relative weight for carpenter's body movement

Movements	r_i	w_i	M	N				
Abduction	2.497368	2.737042	2.959048	0.134051	0.152618	0.171893	0.152854	0.152536
Adduction	1.321598	1.425976	1.500816	0.070939	0.079513	0.087184	0.079212	0.079047
Circumduction	0.293992	0.278294	0.264093	0.015781	0.015518	0.015341	0.015547	0.015514
Dorsiflexion	0.465836	0.446355	0.428334	0.025005	0.024889	0.024882	0.024925	0.024873
Eversion	0.600964	0.569437	0.543917	0.032258	0.031752	0.031597	0.031869	0.031803
Extension	1.661487	1.588972	1.558067	0.089183	0.088602	0.090509	0.089431	0.089246
Flexion	1.848386	1.810123	1.811853	0.099215	0.100933	0.105252	0.1018	0.101589
Hyperextension	1.1.484034	1.716229	1.880438	0.079658	0.095697	0.109236	0.094864	0.094667
Inversion	0.708563	0.693702	0.68419	0.038033	0.038681	0.039745	0.03882	0.038739
Plantar flexion	0.368588	0.30866	0.270999	0.019785	0.017211	0.015743	0.017579	0.017543
Pronation	2.671343	2.891544	3.099687	0.143389	0.161233	0.180063	0.161562	0.161226
Rotation	0.478029	0.463066	0.44647	0.025659	0.025821	0.025936	0.025805	0.025752
Supination	2.814252	3.oo4501	3.182101	0.15106	0.167532	0.184851	0.167814	0.167465
Total	17.214439	17.933901	18.630013					
Reciprocal of Totals	0.058091	0.05576	0.053677					
Increasing order of Recipro	0.053677	0.05576	0.058091					

Table 14. Geometric means, fuzzy weights and averaged and normalized relative weight for mason's body parts

Body Part	r_i	w_i	M		N			
Ankle	1.487778	1.556057	1.618444	0.068826	0.073762	0.078827	0.073805	0.07374
Arm	1.027448	1.070713	1.104906	0.047531	0.050755	0.053815	0.0507	0.050655
Eye	0.349421	0.304815	0.273065	0.016164	0.014449	0.0133	0.014638	0.014625
Finger	0.408283	0.386834	0.368904	0.018887	0.018337	0.017968	0.018397	0.018381
Foot	1.432173	1.505524	1.572123	0.066253	0.071367	0.076571	0.071397	0.071334
Knee	1.805066	1.949615	2.077619	0.083504	0.092418	0.101191	0.092371	0.092289
Knuckle	0.296377	0.26915	0.249044	0.013711	0.012759	0.01213	0.012866	0.012855
Leg	1.731756	1.816929	1.893845	0.080112	0.086128	0.09224	0.08616	0.086084
Palm	0.317031	0.294458	0.276299	0.014666	0.013958	0.013457	0.014027	0.014015
Shoulder	2.435033	2.684638	2.913214	0.112646	0.12726	0.141889	0.127265	0.127153
Spine	7.600449	7.600449	7.600449	0.351603	0.360285	0.370183	0.36069	0.360371
Toe	1.110132	1.137443	1.161478	0.051356	0.053918	0.05657	0.053948	0.0539
Wrist	0.530667	0.519048	0.507203	0.024549	0.024604	0.024704	0.024619	0.024597
Total	20.531613	21.095673	21.616592					
Reciprocal of Totals	0.048705	0.047403	0.046261					
Increasing order of Reciprocals	0.046261	0.047403	0.048705					

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Table 15. Geometric means, fuzzy weights and averaged and normalized relative weight for mason's body movements

Movements	r_i			w_i			M	N
Abduction	0.464821	0.405359	0.366384	0.026776	0.024488	0.023347	0.02487	0.024786
Adduction	0.347026	0.288466	0.249446	0.01999	0.017426	0.015895	0.017771	0.01771
Circumduction	2.344883	2.741407	3.081391	0.135076	0.165608	0.196351	0.165678	0.165117
Dorsiflexion	1.832356	1.77436	1.773303	0.105552	0.107189	0.112998	0.10858	0.108212
Eversion	1.147787	1.114306	1.093598	0.066118	0.067315	0.069686	0.067706	0.067477
Extension	0.449844	0.417165	0.390959	0.025913	0.025201	0.024913	0.025342	0.025256
Flexion	0.415832	0.377428	0.347714	0.023954	0.0228	0.022157	0.02297	0.022893
Hyperextension	2.211346	2.388448	2.550786	0.127384	0.144286	0.16254	0.144737	0.144247
Inversion	1.177133	1.188593	1.197873	0.067808	0.071803	0.07633	0.071981	0.071737
Plantar flexion	0.801137	0.776107	0.755824	0.046149	0.046885	0.048162	0.047065	0.046906
Pronation	1.173479	1.283763	1.37019	0.067598	0.077552	0.087311	0.077487	0.077224
Rotation	1.516854	1.650035	1.752426	0.087378	0.099678	0.111667	0.099575	0.099237
Supination	1.810785	2.148139	2.429799	0.10431	0.129769	0.154831	0.129636	0.129197
Total	15.693282	16.553578	17.359694					
Reciprocal of Totals	0.063722	0.06041	0.057605					
Increasing order of Reciprocals	0.057605	0.06041	0.063722					

Table 16. Geometric means, fuzzy weights and averaged and normalized relative weight for plumber's body parts

Body Part	r_i			w_i			M	N
Ankle	0.314764	0.270481	0.241104	0.01512	0.013536	0.012647	0.013768	0.013732
Arm	2.793158	3.080603	3.320778	0.134168	0.154162	0.174196	0.154175	0.153778
Eye	0.519088	0.555249	0.573546	0.024934	0.027786	0.030086	0.027602	0.027531
Finger	2.841516	2.966507	3.075721	0.136491	0.148452	0.161341	0.148761	0.148378
Foot	0.28467	0.249732	0.227918	0.013674	0.012497	0.011956	0.012709	0.012676
Knee	0.416084	0.413516	0.408096	0.019986	0.020693	0.021407	0.020696	0.020642
Knuckle	3.069063	3.304333	3.512761	0.147421	0.165358	0.184267	0.165682	0.165254
Leg	0.385855	0.392908	0.39044	0.018534	0.019662	0.020481	0.019559	0.019509
Palm	2.889721	2.990647	3.107452	0.138806	0.14966	0.163006	0.150491	0.150103
Shoulder	1.761738	1.767743	1.786049	0.084624	0.088463	0.09369	0.088926	0.088696
Spine	1.142085	1.106626	1.085877	0.05486	0.055379	0.056961	0.055733	0.055589
Toe	0.426034	0.369352	0.334371	0.020464	0.018483	0.01754	0.018829	0.018781
Wrist	2.219661	2.515242	2.754237	0.10662	0.125869	0.144477	0.125656	0.125332
Total	19.06344	19.98294	20.81835					
Reciprocal of Totals	0.05246	0.05004	0.04804					
Increasing order of Reciprocals	0.04804	0.05004	0.05246					

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Table 17. Geometric means, fuzzy weights and averaged and normalized relative weight for plumber's body movement

Movements	r_i			w_i			M	N
Abduction	1.099845	1.023967	0.978716	0.05298	0.051834	0.052426	0.052413	0.052217
Adduction	0.770262	0.719037	0.682469	0.037104	0.036398	0.036557	0.036686	0.036549
Circumduction	1.223612	1.212531	1.211382	0.058942	0.061379	0.064889	0.061737	0.061506
Dorsiflexion	0.288339	0.239364	0.210579	0.01389	0.012117	0.01128	0.012429	0.012382
Eversion	0.2756	0.285303	0.285851	0.013276	0.014442	0.015312	0.014343	0.01429
Extension	1.682192	1.843222	1.974017	0.081033	0.093305	0.105741	0.093359	0.09301
Flexion	1.682192	1.843222	1.974017	0.081033	0.093305	0.105741	0.093359	0.09301
Hyperextension	0.868517	0.852207	0.843214	0.041837	0.043139	0.045168	0.043381	0.043219
Inversion	0.309419	0.308451	0.3003	0.014905	0.015614	0.016086	0.015535	0.015477
Plantar flexion	0.597969	0.489486	0.427144	0.028805	0.024778	0.022881	0.025488	0.025392
Pronation	4.59323	5.108199	5.574707	0.22126	0.258579	0.298617	0.259485	0.258513
Rotation	1.566222	1.842107	2.065367	0.075446	0.093248	0.110634	0.09311	0.092761
Supination	3.711023	3.987805	4.231683	0.178763	0.201864	0.226676	0.202434	0.201676
Total	18.668422	19.754899	20.759445					
Reciprocal of Totals	0.053566	0.05062	0.048171					
Increasing order of Reciprocals	0.048171	0.05062	0.053566					

Table 18. Geometric means, fuzzy weights and averaged and normalized relative weight for welder's body parts

Movements	r_i			w_i			M	N
Ankle	2.16764	2.314419	2.433517	0.10366	0.112833	0.120971	0.112488	0.112432
Arm	0.866832	0.988199	1.09252	0.041453	0.048177	0.05431	0.04798	0.047956
Eye	6.085269	5.898356	5.769307	0.291006	0.287558	0.286794	0.288453	0.288309
Finger	0.471647	0.458155	0.447164	0.022555	0.022336	0.022229	0.022373	0.022362
Foot	2.46553	2.707498	2.931261	0.117905	0.131997	0.145714	0.131872	0.131806
Knee	2.14809	2.331099	2.497963	0.102725	0.113646	0.124175	0.113515	0.113458
Knuckle	0.318907	0.298313	0.282915	0.015251	0.014543	0.014064	0.014619	0.014612
Leg	2.75687	2.75687	2.75687	0.131837	0.134404	0.137045	0.134429	0.134361
Palm	0.311935	0.279499	0.256615	0.014917	0.013626	0.012756	0.013767	0.01376
Shoulder	0.451238	0.423537	0.401943	0.021579	0.020648	0.019981	0.020736	0.020726
Spine	0.898837	0.930481	0.95193	0.042984	0.045363	0.047321	0.045222	0.0452
Toe	0.75908	0.746156	0.73577	0.0363	0.036377	0.036575	0.036417	0.036399
Wrist	0.414671	0.379271	0.353375	0.01983	0.01849	0.017566	0.018629	0.01862
Total	20.116546	20.511855	20.911151					
Reciprocal of Totals	0.04971	0.048752	0.047821					
Increasing order of Reciprocals	0.047821	0.048752	0.04971					

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Table 19. Geometric means, fuzzy weights and averaged and normalized relative weight for welder's body movement

Movements	r_i			w_i			M	N
Abduction	3.218802	3.922821	4.572742	0.144029	0.190131	0.242951	0.19237	0.190493
Adduction	3.218802	3.922821	4.572742	0.144029	0.190131	0.242951	0.19237	0.190493
Circumduction	2.829902	3.124119	3.395084	0.126627	0.15142	0.180381	0.152809	0.151318
Dorsiflexion	0.484668	0.38668	0.326388	0.021687	0.018742	0.017341	0.019257	0.019069
Eversion	0.449439	0.366825	0.313526	0.020111	0.017779	0.016658	0.018183	0.018005
Extension	1.830574	2.058369	2.245418	0.081911	0.099765	0.119299	0.100325	0.099346
Flexion	1.420678	1.478121	1.525837	0.06357	0.071642	0.081068	0.072093	0.07139
Hyperextension	0.144468	0.140336	0.136966	0.006464	0.006802	0.007277	0.006848	0.006781
Inversion	1.173515	1.231673	1.276958	0.05251	0.059697	0.067845	0.060017	0.059432
Plantar flexion	1.249011	1.239701	1.237764	0.055888	0.060086	0.065763	0.060579	0.059988
Pronation	0.506616	0.454929	0.416784	0.022669	0.02205	0.022144	0.022287	0.02207
Rotation	0.76603	0.745749	0.726234	0.034277	0.036145	0.038585	0.036336	0.035981
Supination	1.529186	1.560015	1.60188	0.068425	0.075611	0.085108	0.076381	0.075636
Total	18.821692	20.632158	22.348324					
Reciprocal of Totals	0.05313	0.048468	0.044746					
Increasing order of Reciprocals	0.044746	0.048468	0.05313					

Since we were still stuck with fuzzy triangular values, they were then de-fuzzified by Centre of Area method which was proposed by Chou and Chang. These values were called as M_i (where i = 1, 2, 3 … n). This calculation was done using the following equation:

$$M_i = (lw_i, mw_i, nw_i)/3$$

Then, M_i was normalized using the following function as it was a non-fuzzy number,

$$N_i = \frac{Mi}{\sum_{i=1}^{n} Mi} \cdot M\Sigma_{i=1}^{n} M_i \frac{M_i}{\sum_{i=1}^{n} M_i} \cdot$$

The values of r_i, w_i, M_i, N_i are shown in Tables 11 - 19. In the last and final step, each alternative was multiplied with respectively related criteria and scores for each case were calculated and the one with the highest score was found to be of greatest importance. These values and the ranks are shown in Tables 20 - 21.

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RESULT AND DISCUSSION

Though over the years, technology has given many comfort to human being in the workplace due to mechanized or automated technology. Still, the majority of the tasks are still performed manually in different industries.As labors are the backbone of developing industries like India, so their occupational safety is the most important issue. In this research, it is observed from the Table.20 that body parts like spine, shoulder, leg, and knee are most strained body part for carpenters, masons, plumbers, and welders. But among them from Table 20, it was found that for carpenter spine is the more affected parts for Mason's shoulder, for plumber was the shoulder, and for welder was the leg. Table 21 shows that the difficult body movements like Supination, Circumduction, Hyperextension are the dangerous movements for all types of workers. For Carpenter Supination is more, for mason circumduction, for plumber supination, and for welder circumduction are maximum body movements. This paper shows the most harmful body movements and mostly affected body part due to these movements. So proper ergonomic design must be suggested by modifying the workplace and work system. So, the diseases can be avoided and safety in the workplace can be maintained. To avoid or less these body movements new advanced equipment can be designed. Table 20 shows the body parts ranking.

Table 21 shows the body movements ranking.

Table 20. Body parts ranking

Body Part	Carpenter	Mason	Plumber	Welder	SUM	RANKS
Ankle	0.00242381	0.05304354	0.00154556	0.0070876	0.06410052	6
Arm	0.01177861	0.03643776	0.001730802	0.0030231	0.06854749	5
Eye	0.00147181	0.01052023	0.00309867	0.01817471	0.03326542	13
Finger	0.01093683	0.01322204	0.01670024	0.00140968	0.04226879	9
Foot	0.00293039	0.05131283	0.00142671	0.00830892	0.06397884	7
Knee	**0.00193058**	**0.06638643**	**0.0023233**	**0.00715228**	**0.07779259**	4
Knuckle	0.0058055	0.00924701	0.01859967	0.00092113	0.03457331	12
Leg	**0.00743535**	**0.06192298**	**0.00219578**	**0.00846998**	**0.08002409**	**3**
Palm	0.01257131	0.01008144	0.01689439	0.00086742	0.04041455	11
Shoulder	**0.0152825**	**0.09146522**	**0.00998291**	**0.00130655**	**0.11803718**	**2**
Spine	**0.0227933**	**0.25922639**	**0.00625665**	**0.00284936**	**0.29112571**	1
Toe	0.00107242	0.03877199	0.00211384	0.00229456	0.04425281	8
Wrist	0.00864458	0.01769341	0.001410637	0.00117379	0.04161814	10

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Table 21. Body movements ranking

Movements	Carpenter	Mason	Plumber	Welder	SUM	RANKS
Abduction	0.01602803	0.01782936	0.00587713	0.01200849	0.051743	9
Adduction	0.00830602	0.01273937	0.00411366	0.01200849	0.03716754	13
Circumduction	**0.00163016**	**0.11877394**	**0.00692262**	**0.00953894**	**0.13686567**	**2**
Dorsiflexion	0.00261358	0.07784035	0.00139362	0.00120209	0.08304964	6
Eversion	0.00334176	0.04853837	0.00160837	0.00113502	0.05462351	8
Extension	0.0093777	0.01816745	0.01046846	0.00626267	0.04427628	10
Flexion	0.01067467	0.01646767	0.01046846	0.00450035	0.04211115	12
Hyperextension	**0.00994732**	**0.10376148**	**0.00486438**	**0.00042747**	**0.11900066**	**3**
Inversion	0.00407058	0.05160272	0.00174197	0.00374653	0.0611618	7
Plantar flexion	0.00184337	0.03374099	0.00285792	0.00378158	0.04222386	11
Pronation	0.01694114	0.05554969	0.02909616	0.00139127	0.10297826	4
Rotation	0.00270594	0.07138435	0.01044044	0.00226821	0.08679893	5
Supination	**0.01759672**	**0.09293554**	**0.02269904**	**0.00476802**	**0.13799931**	**1**

Designing a Framework to Avoid Health Problems for Construction Site Workers

Fifty useful responses were collected and tested to examine the validity and reliability of the scale so as to obtain a quantitative and statistically proven identification of the responses. The test for the quantitative variable was conducted by factor analysis on 50 responses using the principal component method followed by varimax rotation to ensure that the variables are important and suitable for the model using Minitab 15.0. Twenty-two items were categorized under nine social factors constituting various variables for the proposed instrument to measure the relation between occupational safety management and firm performance of construction site workers as perceived by safety officers and workers. These nine social factors are defined as a Preventive procedure, OHS training, Risk management, Work practices, Periodic plans, Continuous improvement, Injury avoidance, Emergency plans and Healthcare. The items that failed to get loaded more than 0.5 were not considered for further analysis. This was true for refer to items 5, 6, 8, 10, 21, and 22. Percentage of total variance explained was found to be 75% which is an acceptable value for the principal component varimax rotated factor loading procedure. The internal consistency of the actual survey data was tested by computing the Cronbach's Alpha. Table 22 shows the factor's loading.

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Table 22. Factor loading score

Factor	Item n°	F1	F2	F3	F4	F5	F6	F7	F8	F9	Cronbach's Alpha
Preventive procedures	1	0.877									0.825
	2	0.557									
	3	0.593									
	4	0.892									
	13	0.892									
OHS training	9		0.626								0.782
	10		0.683								
	11		0.787								
	12		0.697								
Risk management	5			0.614							0.516
	6			0.655							
	7			0.578							
	18			0.627							
Work practices	8				0.754						0.714
	21				0.648						
Periodic plans	19					0.748					0.760
	28					0.774					
Continuous improvement	7						0.517				0.656
	15						0.853				
Injury avoidance	16							0.613			0.747
	17							0.820			
Emergency plan	14								0.843		0.824
Healthcare	20									0.888	0.788

After getting seven important parameters/items for the improvement of policies of occupational health and safety by interview with experts, QFD was applied to identify system design requirements for occupational health and safety is studied

- **Customer Needs (What's):** A structured list of requirements derived from expert's feedback.
- **Design Requirements (How's):** A structured set of relevant and measurable services/characteristics which are required for fulfilling what's.
- **Planning Matrix (Left Matrix):** Gives customer/expert perceptions observed in surveys. It includes the relative importance of requirements
- **Interrelationship Matrix (Center Matrix):** Gives the expert's perceptions of interrelationships between design requirements and customer needs. An appropriate scale is applied and illustrated using symbols or figures. Filling this portion of the matrix involves discussions.
- **Design Correlation (Top) Matrix:** Used to identify where design requirements support or impede each other in the system or product design.

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Customer rating $= Z_i + (1/n\text{-}1(\Sigma^{i}_{j=1} B_{ij} Z_j))$

B_{ij} is i^{th} initial customer rating and Z_j denote the relationship between customer need and customer rating respectively
n number of customer need

B_{ij} $[B_{1ij}, B_{2ij}]$.

The individual rating for each design requirement is obtained from the center matrix using the following relation:

$$\text{Design requirement} = \Sigma^{n}_{j} \sum_{j}^{n} . (_j, X_j)$$

where A_{ij} and X_j denote the relative importance of the i^{th} characteristics with respect to the J^{th} customer need in the relationship matrix and the importance of J^{th} customer needs (customer ratings) and n is the number of customer needs. Table 23 shows the design requirements and Table 24 shows the employee requirements.

Table 23. Design requirement

N°	System Design Requirement for Workers in Construction Site
1	Preventive measure
2	Emergencies plan
3	Injury avoidance
4	Health plan
5	OHS training
6	Periodic plan
7	Risk Management

Table 24. Employee requirements table

No	Employee Requirement/Needs for Construction Site
1	Safety training programs are conducted in the organization on regular basis
2	Instruction manuals being followed before executing any hazardous job activity
3	Immediate medical facilities are provided for personal injuries
4	Alarms/beeping sound/alarming light and emergency lights work effectively when a crisis situation arises
5	A Safety equipments are supplied by the organization to avoid accidents
6	The company readily provides health subsidies when accidents occur in the workplace
7	The employees work in health and safety condition
8	Regular auditing is done by OHS
9	Company undertakes a stress risk assessment in the workplace

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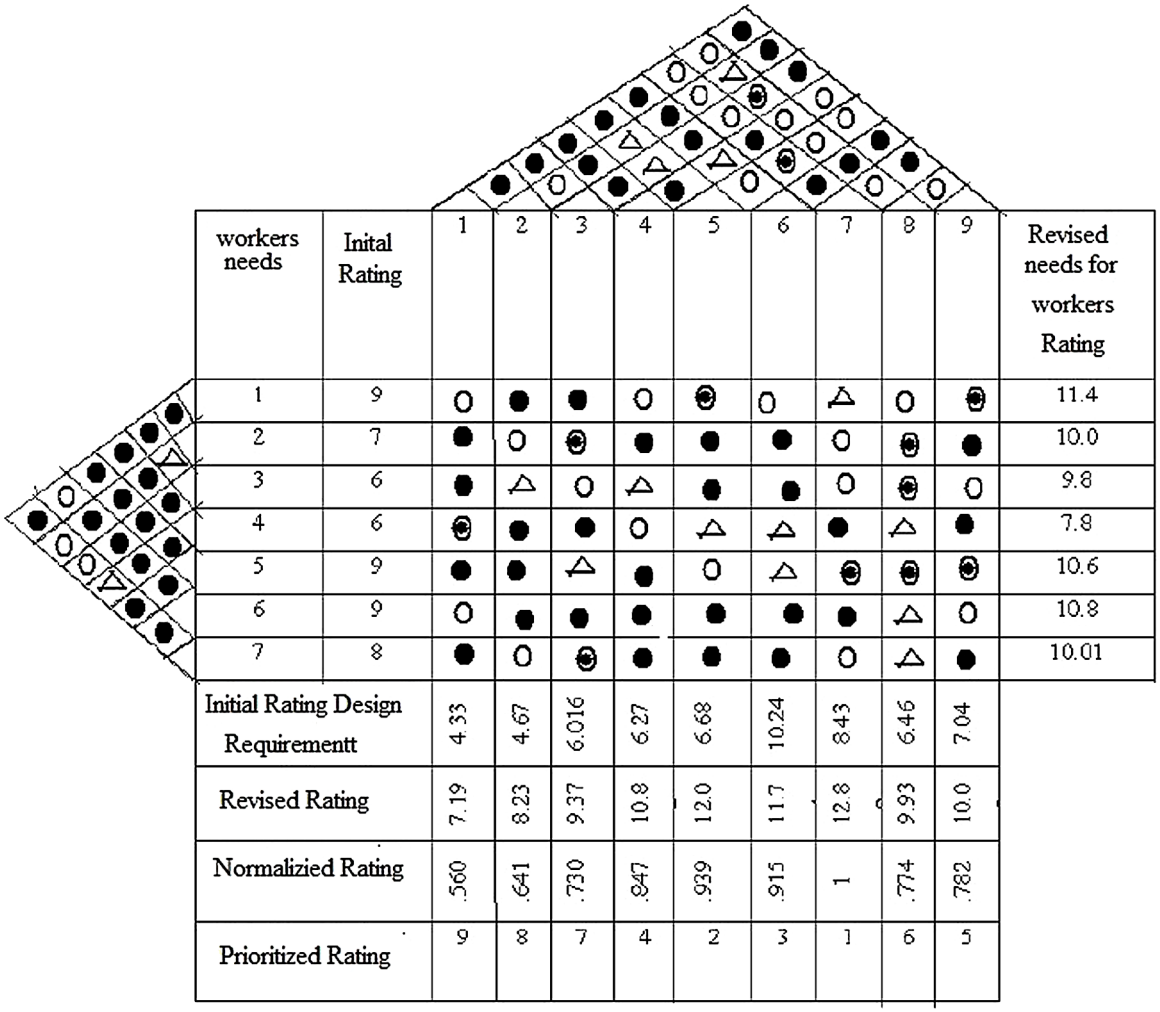
A QFD matrix was prepared and the respondents were asked to assign numeric relative importance scores to the various customer requirements, from the lowest to the highest, on a scale from 1 to 9. They were also asked to express, in numeric values, the strong-moderate-weak relationship between what's and the How's as 0.2, 0.4, 0.6, and 0.8 with symbols. After the responses were collected, scores for each of the columns was computed. The design requirements are prioritized as per their importance of design requirement. Figure 1 shows HOQ for Construction site workers.

Figure 1. House of quality



workers needs	Inital Rating	1	2	3	4	5	6	7	8	9	Revised needs for workers Rating
1	9										11.4
2	7										10.0
3	6										9.8
4	6										7.8
5	9										10.6
6	9										10.8
7	8										10.01
Initial Rating Design Requirementt		4.33	4.67	6.016	6.27	6.68	10.24	8.43	6.46	7.04	
Revised Rating		7.19	8.23	9.37	10.8	12.0	11.7	12.8	9.93	10.0	
Normalizied Rating		.560	.641	.730	.847	.939	.915	1	.774	.782	
Prioritized Rating		9	8	7	4	2	3	1	6	5	

CONCLUSION

Although technology is changing day by day, man-machine interaction is still the main rule of modernization. Human accidents and health hazards are important points of discussion among many researchers. From the whole analysis, the inference found was that considering all 4 kinds of people, the body

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movement which did hurt and injured the most and which brought out the maximum discomfort out of all 13 movements was Supination (wrist curling upwards). And the body part which was damaged the most out of all 13 body parts was Spine. The proper ergonomic design can change or modify the adverse effect generating from man-machine interaction. The main objective of this paper is the application of FUZZY-AHP in understanding role of ergonomic development in the construction sites and the reason for the origin of discomfort of people working there. This will eventually help in rising of the Construction Companies. The above analysis will help them in understanding the problems faced by plumber, mason, welder, and carpenter. It may help in reducing accidents and injuries that are very common on their construction sites. The data collected in this study were self-reported; hence, there is a chance of bias and measurement errors. The sample size for certain groups of employees is small; hence this might affect the results obtained. In future, the studies can be done for different workers. A model can be generated and tested to validate the body movement and body parts rank.

FUTURE RESEARCH DIRECTIONS

In future, more data can be collected on construction site workers of industries also. The analysis can be done for skilled and unskilled workers in heavy working conditions. Other sectors like automobiles, mining sectors can be analyzed by studying their workers. Interpretive structural modelling and SEM can be useful for providing relations among design requirements. More surveys can be done to get a better result.

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KEY TERMS AND DEFINITIONS

AHP: Analytical hierarchy process is a structured technique for organizing and analyzing complex decisions, based on mathematics and psychology.

ANN: Artificial neural network is a computational model based on the structure and functions of biological neural networks. Information that flows through the network affects the structure of the ANN because a neural network changes—or learns, in a sense—based on that input and output.

HOQ: House of quality is a voice of customer analysis tool and a key component of the quality functional deployment technique.

ISM: Interpretive structural equation modeling is a well-established methodology for identifying relationships among specific items, which define a problem or an issue. This approach has been increasingly used by various researchers to represent the interrelationships among various elements related to the issue.

QFD: Quality function development is a structured approach to defining customer needs or requirements and translating them into specific plans to produce products to meet those needs. The "voice of the customer" is the term to describe these stated and unstated customer needs or requirements.

SEM: Structural equation modeling is a multivariate statistical analysis technique that is used to analyze structural relationships. This technique is the combination of factor analysis and multiple regression analysis, and it is used to analyze the structural relationship between measured variables and latent constructs.

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Chapter 33
Applying Metaheuristics to Minimize Work-Related Musculoskeletal Disorders

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ABSTRACT

This article covers the topic of planning and organization of work, which is one of the biggest problems is to establish the most appropriate allocations between human and technical resources, according to the characteristics that define and characterize each individual. These adjustments to decision-making regarding the characteristics of a new larger workforce is a challenge for human resource managers and researchers working to provide well-being and quality of life improvements for employees. The problem of work-related musculoskeletal disorders, coupled with the aging of the active population, may increase the number of citizens with permanent disabilities. Given the complexity and uniqueness of the problems, a decision support system that uses some metaheuristic approaches is presented. The result is a hybrid approach that gives the best solution according to several parameters defined by the decision-maker. Computational results of real problem instances are presented, proving that in most cases, the optimal solution is achieved.

INTRODUCTION

The planning and work organization of human resources is a dynamic process. The working capacity of a human resource is a reflection of the balance between: the job (e.g. work performed); their individual resources (e.g. strengths and weaknesses); and motivation (e.g. job satisfaction). When these three aspects are reconciled, the work capacity of a human resource is increased, their quality of life is improved and consequently their productivity as well. In work planning and scheduling, the priority is always

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given to the capacity and efficiency of equipment and workstations, yet never to human resources. This could lead to some adverse effects on their health. However, some initiatives have been implemented by organizations in order to preserve the health and safety of workers, such as: breaks, gymnastics, health monitoring (e.g. medicine at work), among others. But, work-related musculoskeletal disorders (WMSDs) continue to affect active citizens all over the world (Occhipinti & Colombini, 2016). It is common for companies to sometimes neglect the individual characteristics of their human resources (e.g. limitations, capacities, health condition and capabilities), due to work organization, in order to fulfil their objectives. Moreover, with the average life expectancy increasing and the birth rates decreasing, the labor force will grow older in the coming decades. Thus, the biggest problem nowadays should be allocating the best person to the most adequate workstation, ensuring that WMSDs are minimized. For this type of decision, one must consider the characteristics of the workstation and the capabilities and health condition of the human resource, while ensuring stable productivity. Each person has strengths and weaknesses, regardless of age, which must be leveraged and also taken into consideration in order to ensure the health, safety and quality of life of human resources. In an attempt to provide an active ageing, the main objective of this work is to present a metaheuristic approach, to solve the Work-Schedules Programing and Organizational Resources Integrated Problem (WPORIP) that will establish the most appropriate allocations between human and technical resources, according to the characteristics that define and characterize each individual.

One of the most common and expensive problems of occupational health in the European Union, focuses on WMSDs (OCDE, 2010; Takala, 2007). About 40 million people are affected by these injuries, which are responsible for 50% of occupational absenteeism (with at least three days breaks) and the other 50% of permanent disabilities (Bevan, 2013). Demographic changes, in recent years, points toward a likelihood that in the next decades older workers will become the larger portion of the workforce (Ilmarinen, 2012). There are several works that discuss the inability of companies to adapt to such changes in society (Cappelli & Novelli, 2010). The "Healthy Workplaces for All Ages Campaign 2016-2017" is designed to increase the public's awareness to the importance of good health and safety management at work, throughout an active life and to the importance of adapting the work to the human resource during all his professional career (AESST, 2016). In order to adapt to this new reality, managers will need to not only identify, specify and focus their efforts on changes that characterize the larger workforce, but also to follow this tendency and adjust their actions (Voelpel & Streb, 2010). Scientific researches and developments of new methodologies should be necessary in order to organize the work according to each person's capabilities and characteristics (Castillo & Collins, 2013). The workforce is generally made up of a group of individuals with different characteristics (e.g. lifestyle, skills, training, capabilities and limitations). The lifestyle and adaptability of people at work are some examples of factors that have been ignored over several years by scientific research (Othman, Bhuiyan, & Gouw, 2012). Thus, making quick decisions in line with the individual characterization of organizational resources (human and technics), as well as according to the restrictions and pre-defined objectives by the employers, are some of the essential ingredients to provide workplace safe and healthy and productive workers. Nowadays the development in storage capacity and the increase of computers' processing speeds, can help to automatize the process of making this kind of decisions and improve the solutions (Sheridan, 2014). Organizations and the government should actively promote the values of a focused culture on health and safety, and finally, researchers have the mission to create new flexible working models, which commit to planning and organizing work, according to the individual features of the existing resources. In an increasingly long professional, social and personal life, lifestyle, adaptability to work and the health of

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active citizens can play an important role in creating a sustainable society. Organizations' obligation to providing a safe and healthy work environment, adjusted to the inherent organizational resources (human and technics), can be crucial to keeping people active. It is always the employer that takes obligations and work organization of organizational resources, and human resources takes care of their health and skills. So both the government and organizations should legislate rules to prevent WMSDs. Researchers and managers have a new challenge: to keep the older human resources active in order to ensure society's sustainability and the national pension system.

In this context the Work-Schedules Programing and Organizational Resources Integrated Problem (WPORIP) arises. The WPORIP consists of building the individual working-schedules taking into account the hypothetical sources that could induce injuries and permanent disabilities in each human resource. In real and complex systems peoples' allocation to workstations is a challenge for management and usually the WMSDs are not considered. The majority of the problems are dynamic, with specific objectives and constraints that usually change with time (Topcuoglu, Ucar, & Altin, 2014). So, in order to consider those aspects and characteristics, this work includes the integration of some problems, arising from three distinct areas of research: Ergonomics; Health and safety at work; and Operations research. In order to prevent WMSDs, workstations and human resources must be characterized and evaluated considering the ergonomics and the health safety aspects at work. Then, in order to build the individual work-schedules for the human resources, a scheduling problem that will allocate the human resources to each workstation should be solved. This is a complex problem, so in order to achieve good solutions in a reduced amount of time, a heuristic approach was developed, based on GRASP (Greedy Randomized Adaptive Search Procedure) and VNS (Variable Neighborhood Search) metaheuristics. This type of well-known metaheuristics usually has a good performance in scheduling problems (Fonseca, & Santos, 2014; Rocha, Oliveira, & Carravilla, 2014). The GRASP was first introduced by Feo and Resende (1989), with random search, adaptive and greedy procedures (Feo & Resende, 1989). After that, it has been successfully applied to different optimization problems, since it is based on a local search and it is relatively easy to implement, with few parameters to be adjusted. Moreover, the VNS metaheuristic was initially introduced by Hansen and Mladenovic' (1997) and is based on the exchange neighbourhood associated with a random algorithm to determine starting points for the local search. Unlike other metaheuristics, also based on local search (such as GRASP), it does not follow a pathway. This approach explores neighbourhood after neighbourhood, more or less distant from the current solution, going from the current solution to a new one, only when there is some improvement (Mladenovic´ & Hansen, 1997).

The remaining work is organized as follows: in the next section, the WPORIP definition and characterization is presented; then, a decision support system and the developed approaches to solve the WPORIP are explained. In order to prove the efficiency of the approaches some case studies and the related problem instances are described and also presented, and an analysis of the computational results is also made. Finally, some conclusions are drawn.

The Work-Schedules Programing and Organizational Resources an Integrated Problem

The frequency and intensity of permanence at workstations, submits workers to the same risk situations and to the repetitive use of the same body parts, resulting in the cause of WMSDs. Moreover, workstations may contain different risk situations and require repetitive use of the same body parts. As such, the WPORIP builds individual work schedules for human resources, according to their training, availability,

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physical capacity, state of health, exposure to risk situations and use of the body parts, while minimizing hypothetical WMSDs, related to the work execution. The task of assigning human resources to workstations that are appropriate to their individual characteristics, should take into account the benefits associated with the assignment, and the main objective is to maximize these benefits. One benefit is a numerical value (from 1 to 7) that depends on the characteristics that defines the resources (human and technics), the risk situations and the use of the body parts that support the work performance. Hence to plan the assignments of the human resources to the workstations, and to quantify those benefits, one should consider:

1. The nature of the risk situations of each workstation, ordered from 1 to 21 and divided into 3 groups:
   a. **Professional Risks:** 1. Extreme body postures; 2. Application of force; 3. Exposure to mechanical elements; 4. Repetitive gestures or movements; 5. Manual handling of loads; 6. Shocks or impacts; 7. Extreme temperatures - heat or cold;
   b. **Individual Risks:** 8. Age; 9. Gender; 10. Weight; 11. Anthropometric characteristics; 12. Health status; 13. Lifestyle; 14. Pathologies;
   c. **Organizational and Psychosocial Risks:** 15. Intense work speed; 16. Monotony of tasks; 17. Interpersonal relationships; 18. Time pressure; 19. Performance assessment; 20. Professional dissatisfactions; 21. Organizational model of production.
2. The body parts used to perform the tasks in each workstation, ordered from 1 to 6 (Table 1).

Performing tasks on a particular workstation involves the use of some body parts. A set of methods were developed for evaluate professional risk assessment. These methods (Table 1) were developed to evaluate specific situations, qualitatively or quantitatively and are periodically used in organizations by senior occupational safety technicians to evaluate work posts.

Table 1. Body parts used to carrying out the workstations tasks

Fields of application	Professional risk assessment methods	References
Whole body	REBA	(McAtamney & Hignett, 2000)
Upper limbs	RULA, KILBOM, HAMA, SI, OSHA, HAL, OCRA	(Christmansson, 1994; Kilbom, 1994; Mcatamney & Corlett, 1993; Moore & Garg, 1995)
Upper limbs and Column	QEC;	(Geoffrey et al., 2008)
Upper limbs and trunk	LUBA;	(Kee & Karwowski, 2001)
Upper limbs, lower limbs and column	OWAS	(Karhu et al., 1977; Matila & Vilkki, 1999)
Upper limbs, lower limbs, head and trunk	PT	(Corlett et al., 1979)

In this work, one use of these body parts and they can be exposed at the sources of WMSDs. Subsequently, it was necessary to assign weights (the benefits previously mentioned) to each risk situation (1 to 21) and to each body part (1 to 6). Those weights will serve to calculate the severity of the accumulated exposure, in the construction phase of an initial solution, in order to prevent hypothetical WMSDs.

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In order to quantify the benefits, some specific individual characteristics (SIC) of the human resources should be considered, in order to make the assignments to the workstations: (1) skills; (2) adaptability; (3) lifestyle; (4) contributions; (5) professional and academic training; (6) ergonomics; (7) health condition. Each of these characteristics will receive one score that is computed using the Sidney Katz scale (Katz, et al., 1963). This score varies between 1 and 7, according to this scale:

1. Unfit
2. Minimum
3. Moderate
4. Mean
5. High
6. Very high
7. Maximum

These scores will be the benefits, which will be greater proportionally to the qualification and competence of the human resource to accomplish the work at each workstation. This result gives us a set of matrixes that will be used as inputs, when the working schedules will be computed. These benefits will be used to build the initial solutions for the WPORIP and also to evaluate the final solutions obtained with the metaheuristic approach. With this kind of information, the decision-maker could compare and choose the solution that fits its interests best.

The WPORIP also has several constraints that make it difficult to compute a feasible solution. Some of those constraints are related to the well-known assignment problems. The work load is evenly distributed across the workstations. In addition, each workstation consists of a set of work-posts. In each time period of a fixed time horizon, each work-post can only have one human resource assigned to it and each human resource can only be assigned to one work-post. On the other hand, a workstation can have multiple human resources assigned to it.

In order to solve the WPORIP three problems must be considered in an integrated way:

1. Assignment Problem
2. WMSDs monitoring
3. Work-scheduling programming

The main idea is to always manage the quality of life and well-being of the human resources, preventing hypothetical WMSDs (Figure 1).

The quality of professional life can promote positive and active attitudes towards life, avoiding some of the occupational diseases and preventing physical and psychological exhaustion (Ilmarinen, 2012). There are studies which indicate that retirement can interfere with the health status of people (Uva, Fonseca, Baltazar, & Dias, 2015). Thus, designing new working methods may allow the active life of people in organizations to be extended. As a result, active people are supposed to be able to enjoy better living conditions.

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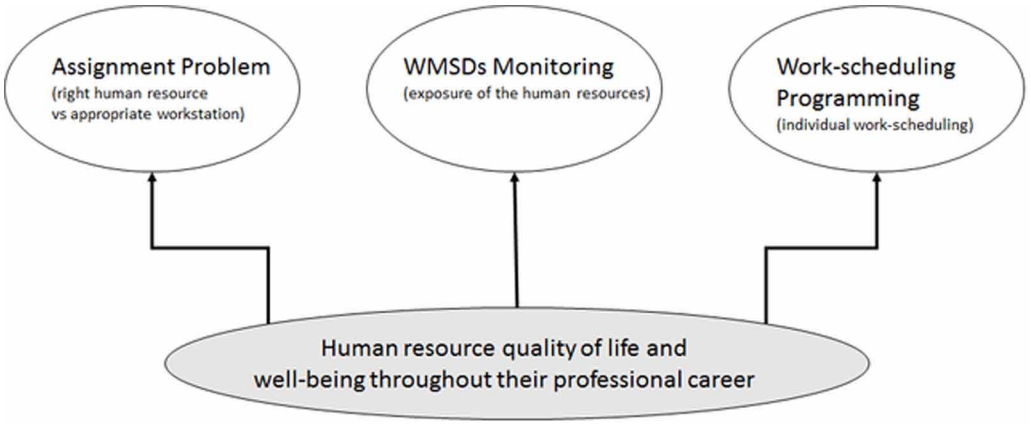
Figure 1. Three areas integration of the WPORIP



A DECISION SUPPORT SYSTEM TO SOLVE THE WPORIP

A significant part of people's life-time is spent in the workplace, therefore it is worthwhile to minimize hypothetical WMSDs in order to ensure the workers' quality of life within organizations. By applying techniques used in optimization problems, one can solve the WPORIP and achieve good and feasible solutions according to the organization's resources (human and technical) and objectives. The objective of this work is to develop a tool that allows, in a real work context, the assignment of people to workstations, while guarantying the company operations planning and the health and safety of the workers. In order to do this, the developed approach is divided into 3 phases:

1. Apt human resource selection and evaluation of its individual exposure in WMSDs risk sources.
2. Organizational resources scheduling (human and technical) and balance of the workload.
3. Individual work-scheduling problem.

The WPORIP has a large amount of data and constraints (as presented in the previous section) and it could be considered a complex problem. Therefore, a heuristic approach to solve it was developed, in order to decrease the computational time needed to obtain a feasible solution. So, the contribution of the present study results in a decision support system (DSS) that can compute individual work-schedules. The main objective of this DSS is to build the work-schedules for a fixed period of time, while minimizing hypothetical WMSDs and maximizing the use of human resources. For the WPORIP resolution, two different metaheuristics were applied, the GRASP and VNS. Each initial solution is built based on GRASP approach (Resende & Feo, 1996) and subsequently, starting from this solution, neighbourhood structures are generated based on a variant of the VNS approach (VNS with a restricted list, VNS-LR). This local search, not only allows to find new and better solutions, but also making it so the decision-maker can choose one of the final solutions that he considers the best one for its particular case. Moreover, this DSS also allows the decision-maker to validate all the classification and evaluation parameters previously defined to the human resources, as well as all the definitions related to the WMSDs.

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Apt Human Resource Selection and Evaluation of its Individual Exposure in WMSDs Risk Sources

In the first phase of the DSS approach, a list of apt human resources is created for each workstation, named Apt Candidate Restricted List (ACRL). A human resource is considered an apt candidate, based on its specific individual characteristics (SIC), if they can complete all the tasks inherent to the workstation (Figure 2). In order to build the ACRL, an evaluation of each human resource is done for each workstation, using the adapted Katz scale (previously presented) and according to his adaptive capacity, health condition and degree of preference in performing the work at the given workstation. A minimum score is imposed by the decision-maker, and if the human resource achieves an evaluation equal or bigger than this score, it will be accepted and inserted into the ACRL. In the end, all the candidates of an ACRL are arranged in descending order.

After all the ACRL are built (one for each workstation), a permanence time in the risk sources with the potential to cause WMSDs for each human resource is computed. This permanence time, allows for the evaluation and monitoring of each human resource during its labouring scheduling according to its SIC (Figure 3). The workstations also have specific individual characteristics (SIC) that are related to the risk situations of each work-post and the related use of the body parts to perform the work. As such, the permanence time is computed according to the SIC of each workstation (relationship between the risk situations and the use of the common body parts). Some exposure limit values (ELV) are stablished by the decision-maker for each workstation, indicating the permitted exposure of a human resource performing work, according to: time, frequency, incidence and the consequent intensity of exposure. Those ELV are also related to the risk situations and the use of body parts in each workstation.

This will be helpful to the procedure that solves the scheduling human resource/workstation problem. In this case, only a candidate that has not yet exceeded the ELV should be associated with a work-post, so that their health and safety will be not compromised.

Figure 2. ACRL building procedure

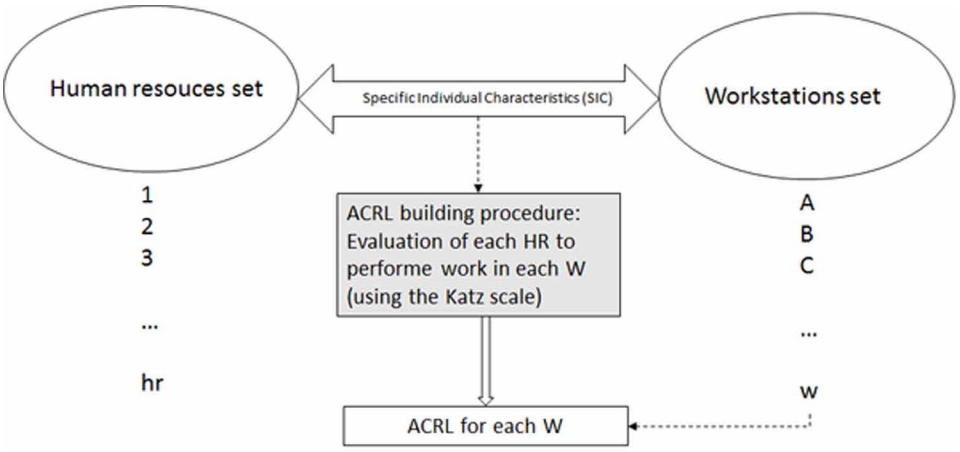

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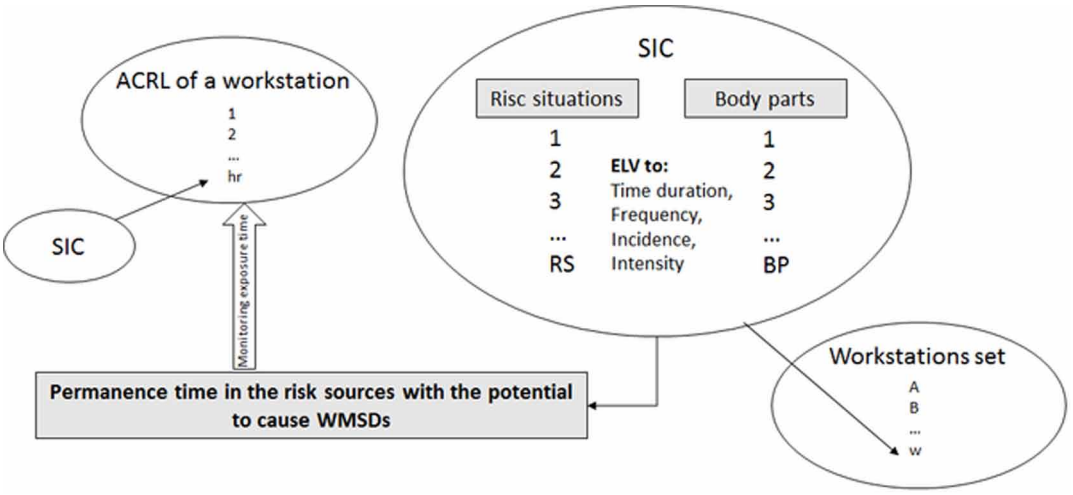
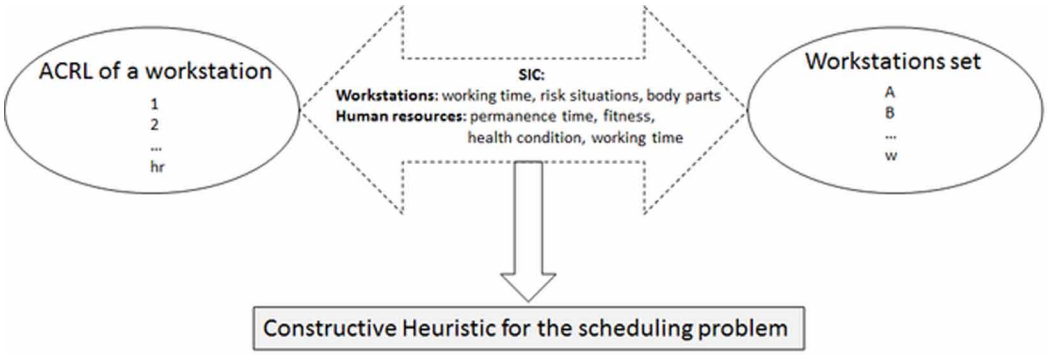
Figure 3. Evaluation procedure of individual exposure of each candidate in WMSDs risk sources



Organizational Resources Scheduling and Workload Balance

According to the previous data and information and with the organization capacity and production planning, the human resources are scheduled to each work-post. (Figure 4). In order to do that, a heuristic approach was developed to build an initial feasible solution (Figure 5). The scheduling is made according to human resource abilities, health condition and preferences to execute the tasks.

Figure 4. Scheduling the organizational resources problem



The main objective of the heuristic, consists of maximize the sum of the benefits that each worker has when scheduled to a workstation, which is based on the GRASP approach. Like in the GRASP, this constructive algorithm can have a greedy character, assigning always the best of the best of the available candidates of a given period of work in the ACRL to each workstation. Or it can be totally random - in this case, each available human resource is chosen randomly from ACRL. This process (from greedy to totally random) is controlled by a parameter α, which will define the size of the ACRL and will define

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the benefit in adding a candidate to the current solution. The parameter α could vary between 0 and 1; when equal 1 it is a greedy choice and when equal 0 it is a random choice.

Subsequently, and assuming that just as in any real problem the scheduling is not ideal (that is, even when a solution maximizes the benefits of the scheduling), there are always exposures that can probably cause WMSDs to workers. This is due to, for example, workers that are in constant subjection to the same type of risk or adopt attitudes and behaviours that are inadequate to their health and safety. Hence, it is essential to make or consider an homogeneous distribution of the workstations by the apt workers. As such, whenever a candidate is scheduled to a work-post, the balance of the workload at the SIC (risk situations and body parts) of the workstation must be evaluated. This evaluation is made using a score to each scheduling. For each assignment human-resource/workstation an evaluation is made, according to an Evaluation Function (EF). This function gives us a score, composed of three parameters, which also depends on the decision-maker:

$$EF = P_1 \times I_1 + P_2 \times I_2 + P_3 \times I_3$$

where:

P_1 is the human resource's ability to perform workstation work
P_2 is the human resource's health condition to perform the workstation work
P_3 is the human resource's preference to perform the workstation work

While, I_1, I_2, I_3, are weights assign to each parameter by the decision-maker and represent the importance given to each of them. The summation of the weights must always be equal to 1.

It is assumed that all the human resources respect hygiene and safety standards, to ensure their well-being.

Individual Work-Scheduling Problem

To a given planning horizon it is necessary to use and integrate the information given by each of the previous problems. The objective is to plan an individual work-scheduling for each human resource according to what defines and characterizes it. The work-scheduling, has the following constraints: a given plan horizon mustn't have empty periods; the permanence time in the risk sources with the potential to cause WMSDs must be balanced; and all the requirements of the organization must also be fulfilled.

In order to solve this problem a hybrid based on the GRASP and VNS-LR meta-heuristics approach was developed. The developed approach includes some conditions in order to build the work-schedules. Some of them are related to the human resources, such as: professional skills, adaptability to work, hours of cumulative exposure to risk situations and use of body parts, etc.; but also related to the workstations, such as: number of work-posts, exposure limit values, periods to carry out the work, duration of tasks, etc.

So, for a given time horizon (set of periods for one or more days), the objective is to obtain a work schedule for each human resource, that guarantees all the production requirements and organization capacity and that minimizes hypothetical WMSDs (or maximize the benefits). Thus, after constructing an initial solution, a local search is performed to improve it and to ensure the complete filling of the individual schedule, while guaranteeing the balance of the workloads (Figure 5).

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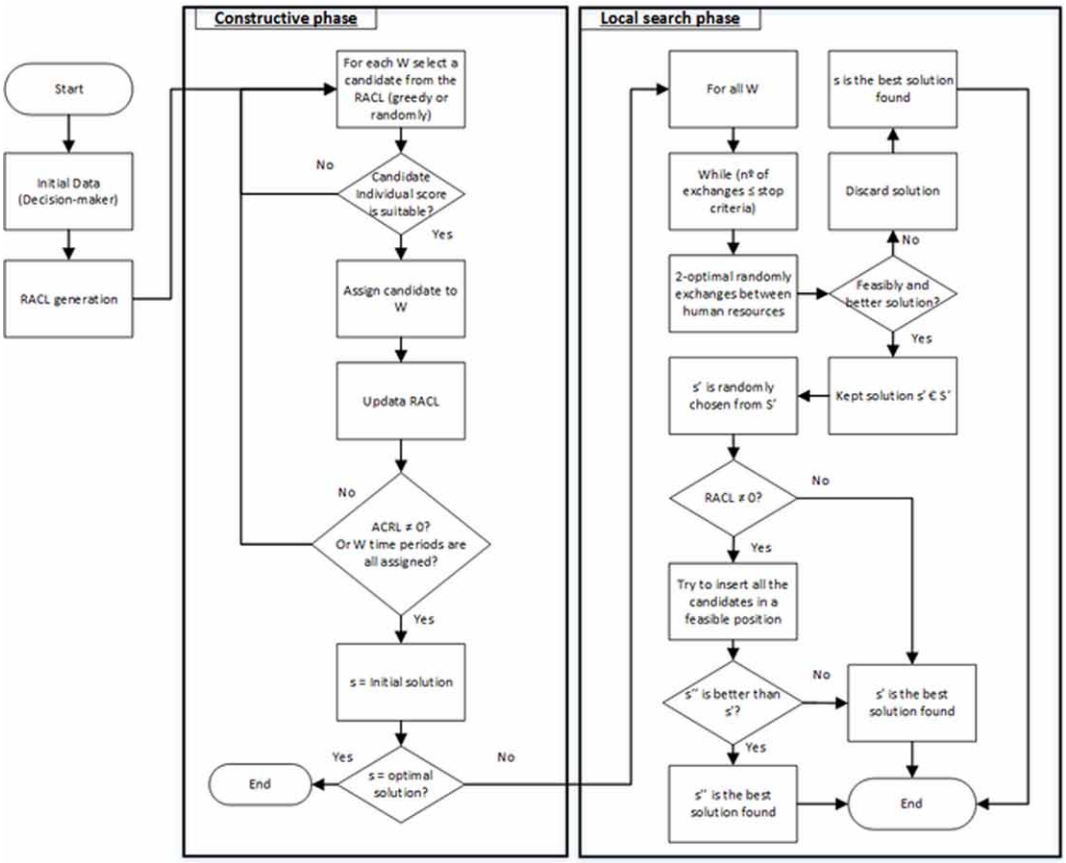
Figure 5. Hybrid approach fluxogram



In the local search phase (Figure 5), new solutions are randomly generated, always creating a neighborhood structure. These neighborhoods are built performing the 2-optimal exchanges of human resources, in a workstation and between workstations, in this order. The stop criteria for the exchanges are defined by the decision-maker, and it could vary between one and the total number of human resources involved in the problem. The human resources to be exchanged are randomly chosen. After the exchanges, a new neighborhood is composed by feasible and better solutions according to a given aspiration criteria (Figure 6). From that set of new and better solutions one is randomly chosen and if there are still some human resources in the workstations ACRL, with free time periods, then some 1-optimal movements will be made. Those insertions movements will be validated and the final solution evaluated in order to see if it is better than the previous one. Those movements are made to guarantee that all workers do not have free time periods in the final work-schedule. The hybrid algorithm ends with the best solution found.

Several test versions of the hybrid heuristic were developed (Figure 6), resulting in five different approaches. Each approach differs in the way that the neighborhood structures are build; due to a given aspiration criteria and the type of constructive algorithm. So, five test versions are proposed that are a conjugation between the two types of the constructive heuristic (greedy or random) and the four types of the local search (type of aspiration criteria to build the neighborhood structures). Depending on the decision maker, the solutions could be built with the aim of optimize the human resources SIC, or mini-

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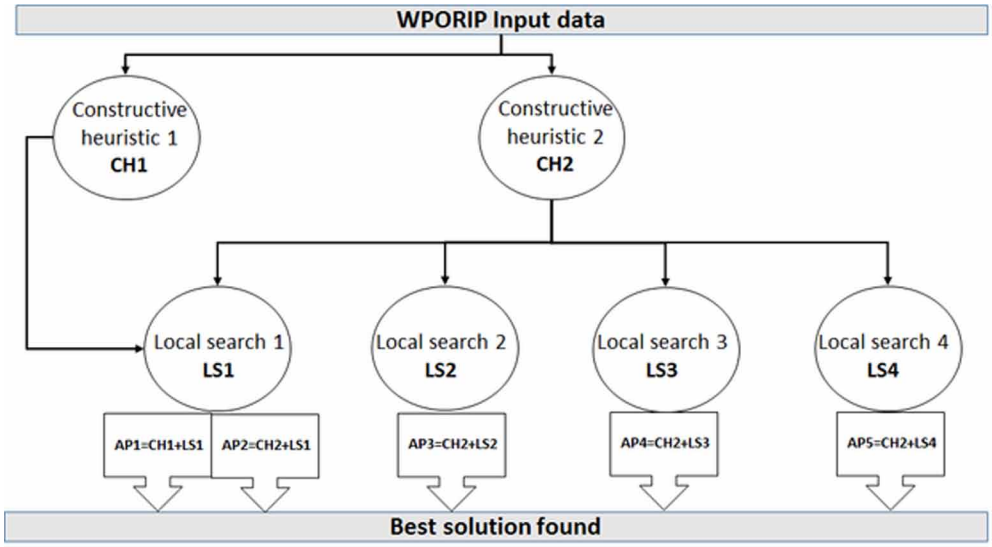
mize three different permanence time in the risk sources with the potential to cause WMSDs, by giving preference to the following SIC:

- The best of the best candidates for each workstation
- Less time exposure in the workstations risk situations
- Less time exposure in the workstations body parts
- Less permanence time in a given workstation

These four options are the aspiration criteria and with these four aspiration criteria and the two types of the constructive heuristic, five types of approaches are applied to solve the WPORIP:

- AP1 – Constructive phase: greedy constructive heuristic; local search phase: 2-optimal random exchanges between human resources in the same workstation.
- AP2 – Constructive phase: random constructive heuristic; local search phase: 2-optimal random exchanges between human resources in the same workstation.
- AP3 – Constructive phase: random constructive heuristic; local search phase: 2-optimal random exchanges between human resources, in the same and in different workstations, that have the smaller exposure time in the workstation risk situations.
- AP4 – Constructive phase: random constructive heuristic; local search phase: 2-optimal random exchanges between human resources, in the same and in different workstations, that have the smaller exposure time in the workstation body parts.
- AP4 – Constructive phase: random constructive heuristic; local search phase: 2-optimal random exchanges between human resources, in the same and in different workstations, that have the smaller permanence time in the workstation.

Figure 6. Five different approaches



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In each approach, all the generated solutions for all neighborhood structures must be evaluated and validated, in order to fulfill all the problem constraints and characteristics. In the end, as presented in Figure 6, for all the solutions generated, the 1-optimal insertion movement will be performed if the ACRL of a given workstation is not empty. This step will guarantee that all the human resources have the individual work-schedule without free periods. To finish the approach, the algorithm has two ways of evaluating a solution:

1. An objective function, that minimizes the hypothetical wmsds - in this case, the optimal value is zero;
2. An evaluation function that should be maximized - in this case, the biggest value the better.

In the end, for all the achieved solutions, those two parameters are computed. The decision-maker has to choose one of the two evaluations and the algorithm ends with the best solution found.

TEST PROBLEMS

The decision support system was implemented in Java language (IntelliJ IDEA software, version 15.0.2). The tests were all performed on a computer with an Intel (R) Core (TM) i7 4510U @ 2.00GHz 2.60GHz RAM, 8.00 GB and 64 bits.

Due to WPORIP being a new problem, there are no published instances in the literature that can be used for testing and comparing results. So, it was necessary to generate some problem instances using real problems data of repetitive tasks systems. Two different sets of problem instances, Case Study (CS1 and CS2), were created, representing two scenarios of heterogeneity of work teams and tasks (Table 2).

1. CS1 – multifunctional but homogenous work team, with simple tasks.
2. CS2 – heterogeneous work team, with complex tasks and skilled workers.

Each case study includes the following information/data:

1. Resources characterization (workstations and human resources).
2. Time horizon of the time-schedule.
3. Workstations scheduling efficiency.

Aside from this information, each problem is also identified by the identification of the tasks performed at each workstation and the human resources able to execute those tasks, as well all the human resources and workstations SIC (Table 3 and Table 4).

According to Table 3, the CS1 is composed of 10 human resources, 25 repetitive tasks distributed evenly by the workstations. The workstations efficiency is 97%, which corresponds to 3% of inactive time and with a total of 7 workstations, in which 3 have two work-posts. In those problem tests there are 21 risk situations according to each workstation characteristics and the use of 6 body parts. It is necessary to compute 10 individual work-schedules each one with 7 days and 2 daily periods (morning and afternoon), for a total of 140 time periods.

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Table 2. Instances used in the validation and testing of the developed work model

Designation	Case Study	
	CS1	CS2
Number of human resources	10	20
Number of tasks, distributed evenly by workstation	25	53
Number of workstations	7	19
Number of work posts	10	20
Number of risk situations	21	21
Number of body parts	6	6
Number of individual time-schedules	10	20
Number of daily periods	2	4
Time horizon of time-schedules (days)	7	21
Total number of periods	140	1680
Total number of minutes of work	33600	201600
Workstations scheduling efficiency	0.97	0.95

Table 3. Description of the Case Study 1

Case Study 1 (CS1)						
Workstation (W)	Tasks	Body Parts	Risk Situations	Number of Work Posts	Number of Apt HR	Human resources apt identification
1	1, 2, 18, 24	1	2, 5, 6, 7, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21	2	10	1, 2, 3, 4, 5, 6, 7, 8, 9, 10
2	16, 17, 19, 23, 25	6	2, 3, 4, 5, 6, 7, 11, 12, 13, 15, 16, 17, 18, 19, 20, 21	2	9	1, 2, 3, 4, 5, 6, 7, 8, 10
3	20, 21, 22	3	2, 3, 4, 5, 6, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21	1	9	1, 2, 3, 4, 5, 7, 8, 9, 10
4	3, 4, 5, 12	2	1, 3, 4, 11, 15, 16, 17, 18, 19, 20, 21	1	8	3, 4, 5, 6, 7, 8, 9, 10
5	6, 7, 13	5	1, 3, 4, 7, 11, 15, 16, 17, 18, 19, 20, 21	1	8	3, 4, 5, 6, 7, 8, 9, 10
6	8, 9, 14	4	3, 6, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21	2	8	3, 4, 5, 6, 7, 8, 9, 10
7	10, 11, 15	4	1, 3, 4, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21	1	8	3, 4, 5, 6, 7, 8, 9, 10

The CS2 is a bigger problem than the CS1 and it is composed of 20 human resources, 53 repetitive tasks distributed evenly by the workstations (Table 4). The workstations efficiency is 95%, with 5% of inactive time and with a total of 19 workstations, in which only one has two work posts. In those problem tests there are 21 risk situations according to each workstation characteristics and the use of 6 body parts. It is necessary to compute 20 individual work-schedules each one with 7 days and 4 daily periods (2 in the morning and 2 in the afternoon), for a total of 1680 time periods.

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Table 4. Description of the Case Study 2

Case Study 2 (CS2)						
Workstation	**Tasks**	**Body Parts**	**Risk Situations**	**Number of Work Posts**	**Number of Apt HR**	**Human resources apt identification**
1	1, 2	3	2, 3, 5, 6, 11, 12, 14, 15, 16, 18, 19, 20, 21	1	20	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20
2	8, 11, 27	2	2, 5, 6, 11, 12, 13, 14, 15, 17, 18, 19, 19, 20, 21	2	20	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20
3	5, 12, 22	4	1, 3, 4, 6, 7, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21	1	9	3, 6, 12, 14, 15, 16, 17, 18, 19
4	13, 14	1	1, 3, 12, 14, 15, 16, 17, 18, 19, 20, 21	1	20	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20
5	4, 15, 33	6	4, 6, 12, 13, 14, 15, 18, 19, 20, 21	1	13	5, 6, 7, 8, 10, 11, 12, 13, 15, 16, 17, 18, 19
6	6, 9, 16, 32	5	4, 6, 7, 9, 12, 13, 14, 15, 18, 19, 20, 21	1	11	3, 6, 7, 11, 12, 13, 14, 16, 17, 18, 19
7	7, 10, 51	6	12, 14, 17, 18, 19, 20, 21	1	20	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20
8	28, 35	2	3, 5, 12, 14, 16, 17, 18, 19, 20, 21	1	20	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20
9	29, 34	4	3, 5, 12, 14, 15, 17, 18, 19, 20, 21	1	20	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20
10	17, 30	6	3, 4, 6, 10, 11, 1213, 14, 15, 18, 19, 20, 21	1	20	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20
11	18, 23, 24, 36	4	5, 6, 12, 13, 14, 15, 19, 20, 21	1	13	1, 2, 3, 9, 10, 11, 13, 14, 15, 16, 17, 18, 19
12	19, 20	3	1, 3, 4, 6, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21	1	3	12, 18, 19
13	31, 37	6	1, 3, 4, 6, 12, 13, 14, 16, 17, 18, 19, 20, 21	1	3	13, 18, 19
14	21, 38	1	4, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21	1	20	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20
15	25, 26, 39	4	4, 6, 10, 11, 12, 13, 14, 15, 17, 18, 19, 20, 21	1	20	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20
16	40, 42, 52	3	4, 6, 7, 10, 11, 12, 13, 14, 15, 17, 18, 19, 20, 21	1	20	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19
17	41, 43, 44, 45, 3	5	3, 4, 6, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21	1	5	3, 11, 17, 18, 19
18	16, 47	3	1, 3, 6, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21	1	5	3, 12, 16, 18, 19
19	49, 50, 53, 48	3	2, 3, 4, 6, 10, 11, 12, 13, 14, 15, 17, 18, 19, 20, 21	1	20	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20

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For these two problems, there are some constraints that must be respected. Those constraints are categorized as strong constraints and weak constraints. The former must be respected in order to have an admissible solution to the problem. The latter could be violated but a penalty should be added to the objective function. Some of the considered constrains can be summarized as:

- **Workstations and Human Resources Weak Constraints:** The working time (minutes/free periods); the exposure limit values, indicative of the allowed permanence of a human resource; stand-alone workstations in a time-schedule; alternate positioning of workstations in the same individual time-scheduling; number of times that the same human resource is scheduled to the same workstation; etc.
- **Workstations and Human Resources Strong Constraints:** Number of daily periods; task durations; maximum number of human resources needed for a workstation; Maximum number of periods that a human resource could be scheduled to a workstation without induce WMSDs; etc..

ANALYSIS AND DISCUSSION OF THE RESULTS

For each CS1 and CS2, the hybrid approach was executed ten times for 10, 100, 1000, 10000 and 20000 iterations (Figure 5). Tables 5 to 9 show the results obtained using the five approaches (Figure 6). In table 5, the mean value of the initial solution found with the constructive heuristic (CH1 and CH2) and the mean value of the final solution (AP1 to AP5) for each CS (Table 5) are presented.

The objective function selected is the minimization of the hypothetical WMSDs, so, if the value of the solution is zero, one can say that the optimal solution was achieved. As explained before, the AP1 follows the best of the best candidates for each workstation aspiration criteria; this implies that the best of the apt candidates is always chosen. Using this approach, the solutions achieved are always the same no matter the number of algorithm interactions. In the 10 runs and for all the algorithm iterations, the optimal solution was not always achieved (Table 5), but for all the optimal solutions found it was verified that all the individuals' work-schedules are fulfilled and the workstations do not have any free periods. In terms of computational times (Table 6), all the approaches are very fast. For the CS1 the maximum time (for the 20000 interactions) was 3 seconds and for the CS2, where the dimension of the problem is bigger, the longest time was around 14 seconds.

In order to evaluate the solutions, whose value is not optimal, an analysis related to the most critical weak constraints was made. The weak constraints considered critical are the severity of WMSDs risk situations (Table 7) and the severity of excessive use of the body parts (Table 8), inherent to the tasks performing and that are common to different work-posts. Those are occurrences that arise from the realization of the work itself. One can conclude that those values are critical only in the case of the CS2, when solved with the greedy constructive heuristic (CH1). In all the other solutions the achieved values are zero or close to it.

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Table 5. Results for 10 runs of the hybrid approach

Nº of iterations		Hybrid Approach									
		AP1		AP2		AP3		AP4		AP5	
		Initial Sol.	Final Sol.	Initial Sol.	Final Sol.	Initial Sol.	Final Sol.	Initial Sol.	Final Sol.	Initial Sol.	Final Sol.
CS1	10	0	197,30	48,52	36,44	203,36	121,86	179,86	186,47	130,46	1,21
	100	0	85,00	78,57	0,38	105,52	55,16	164,46	73,00	166,78	0,61
	1000	0	0	153,40	0	110,83	1,30	109,12	0,62	100,64	0
	10000	0	0	201,22	0	111,89	0,82	126,48	0,86	61,23	0
	20000	0	0	126,61	0	132,91	0,85	109,22	0,86	48,83	0,61
CS2	10	104799,96	103663,71	6758,65	6607,45	6603,24	6538,12	6379,48	6379,47	749,72	691,51
	100	104799,96	94119,06	6725,30	5846,20	6500,44	6198,85	6589,45	6307,67	742,53	482,70
	1000	104799,96	39722,69	6724,70	1566,43	6495,40	5869,00	6862,52	6092,94	734,71	0,25
	10000	104799,96	21864,06	6465,56	199,35	6530,18	5945,34	6818,75	6033,07	707,20	0,20
	20000	104799,96	21863,09	6770,19	184,16	6601,93	5976,90	6708,30	6142,44	699,09	0,19

Table 6. Mean computational time in milliseconds

Nº of iterations		Hybrid Approach				
		AP1	AP2	AP3	AP4	AP5
CS1	10	85,00	54,00	55,50	38,50	59,00
	100	204,50	117,00	126,00	94,00	132,50
	1000	620,50	485,00	479,50	443,50	446,50
	10000	1722,00	1559,50	1419,00	1612,00	1676,00
	20000	2035,50	1988,50	2047,50	1956,00	1993,50
CS2	10	389,00	262,00	227,50	183,50	301,00
	100	1792,00	992,00	939,00	893,50	1047,50
	1000	3839,50	2739,00	2105,00	2090,50	2486,00
	10000	8617,50	7728,00	6480,50	6370,00	6442,50
	20000	13049,50	12634,50	11273,50	11328,00	11153,00

In terms of robustness of the approach, the average number of exchanges (2-optimal movements) and insertions (1- optimal) made in each iteration, during the local search, was analyzed (Table 9). As should be expected, in AP1 the number of insertions is always zero, since the initial solution is greedy. But the number of exchanges is always considerably higher when compared to the other test versions. So, according to the information in Table 9, one can see that there is always a very significant improvement between the initial and the final solution. Analyzing all the solutions, there were no skilled workers without assigned workstations, except for the AP2 and AP5.

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Table 7. Mean values of the severity of WMSDs risk situations

Nº of iterations		Hybrid Approach									
		AP1		AP2		AP3		AP4		AP5	
		Initial Sol.	Final Sol.	Initial Sol.	Final Sol.	Initial Sol.	Final Sol.	Initial Sol.	Final Sol.	Initial Sol.	Final Sol.
CS1	10	*	0	*	0	*	0	*	0	*	0
	100	*	0	*	0	*	0	*	0	*	0
	1000	*	0	*	0	*	0	*	0	*	0
	10000	*	0	*	0	*	0	*	0	*	0
	20000	*	0	*	0	*	0	*	0	*	0
CS2	10	*	112946,40	*	0	*	0,01	*	0	*	0,01
	100	*	112946,40	*	0	*	0,01	*	0	*	0,01
	1000	*	112946,40	*	0	*	0,01	*	0	*	0,01
	10000	*	112946,40	*	0	*	0,01	*	0	*	0,01
	20000	*	112946,40	*	0	*	0,01	*	0	*	0,01

Table 8. Mean values of the severity of excessive use of body parts

Nº of iterations		Hybrid Approach									
		AP1		AP2		AP3		AP4		AP5	
		Initial Sol.	Final Sol.	Initial Sol.	Final Sol.	Initial Sol.	Final Sol.	Initial Sol.	Final Sol.	Initial Sol.	Final Sol.
CS1	10	*	0	*	0,18	*	0	*	0	*	0
	100	*	0	*	0,18	*	0	*	0	*	0
	1000	*	0	*	0,18	*	0	*	0	*	0
	10000	*	0	*	0,18	*	0	*	0	*	0
	20000	*	0	*	0,18	*	0	*	0	*	0
CS2	10	*	32760	*	0,96	*	0	*	0	*	0
	100	*	32760	*	0,96	*	0	*	0	*	0
	1000	*	32760	*	0,96	*	0	*	0	*	0
	10000	*	32760	*	0,96	*	0	*	0	*	0
	20000	*	32760	*	0,96	*	0	*	0	*	0

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Table 9. Mean values of insertion and exchange movements

Nº of iterations		Hybrid Approach									
		AP1		AP2		AP3		AP4		AP5	
		1-Optimal	2-Optimal	1-Optimal	2-Optimal	1-Optimal	2-Optimal	1-Optimal	2-Optimal	1-Optimal	2-Optimal
CS1	10	0	9	0	2	0	3	0	0	0	3
	100	0	42	0	5	0	6	0	0	0	7
	1000	0	50	0	12	0	15	0	0	0	9
	10000	0	52	1	18	0	11	0	0	0	9
	20000	0	51	1	13	0	15	0	1	0	14
CS2	10	0	10	0	4	0	3	0	3	0	4
	100	0	100	1	19	0	21	0	13	1	18
	1000	0	816	6	159	0	22	0	23	0	91
	10000	0	1302	40	231	0	24	0	20	1	101
	20000	0	1293	57	246	0	23	0	17	1	148

CONCLUSION

The active population, in the coming years, will tend to age. Supposing that human resources are exposed to hazards and risks for longer periods of time, health problems can be a result of the work routine and it could increase if no preventive and corrective measures are taken. Regardless of the profession, for a human resource to complete some tasks, they must use certain parts of the body for long periods and consequently can be exposed to various situations of risk. This could cause WMSDs (temporary or permanent) in the human resources. Good practices by management and human resources are some of the key elements to the well-being and proper functioning of a system. However, in spite of the initiatives of organizations in the prevention of the health and safety of workers (e.g. breaks, work exercises, health surveillance), WMSDs continues to affect the average person who perform simple, yet monotonous and repetitive tasks. It should be noted that people are not machines that can be programmed to achieve certain objectives. However, just like a machine, people also suffer wear (physical and psychological) and require maintenance. In processes with monotonous and repetitive tasks, it is essential to integrate a balance of the workload with the monitoring and the exposure limits in sources potential to cause WMSDs. However, this combination may allow the decision-maker not only to monitor hypothetical injuries, but also contribute to the active life of older workers in organizations. For this, it is necessary to dealt with this subject as an integration of three distinct areas of knowledge: Operational Research, Ergonomics and Health and Safety at Work. In order to do that a new problem arises: Work-Schedules Programing and Organizational Resources Integrated Problem (WPORIP).

In this work a DSS using a hybrid approach was developed to solve the WPORIP, based on the GRASP and VNS-LR. In this DSS all the input data and all the parameters (according to each problem and reality), could be adjusted by a decision-maker. Because, the closer the individual characterization of the organization resources is to reality, the more efficient the solution found will be. This approach has proven to achieve good results in a very small computational time, in most cases insignificant, and it can be applied in any real situation.

It is estimated that good practices resulting from the planning and organization of work, using the long-term model presented, can give a better control of the hypothetical WMSDs throughout profes-

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sional careers and subsequent healthy ageing of citizens. The basic limitations found during this study were the absence of references in the literature regarding the integration of the scheduling problems and the prevention of WMSDs. The lack of research in this area leads to three more important limitations related to: risk factors definition; the choice of characteristics and constraints to be considered in the selection criteria for human resources; and establishing the exposure limit values for each risk situation and body parts inherent to work.

It would be interesting if this problem would contribute to the discussion of other scheduling problems and new working methods related to the monitoring of WMSDs and the active ageing of the population. In terms of future work, it would be interesting to apply these approaches to real cases, in order to compare the DSS solutions with those actually practiced. In conclusion, we hope that the contribution of this work may stimulate future and relevant developments in this research area.

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Chapter 34
Opportunities and Challenges of Using Mobile Applications for Workplace Health Promotion:
A Qualitative Study

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ABSTRACT

Workplace health promotion (WHP) needs be adjusted to the new ways of working and improved in terms of participation rates. As mobile applications (apps) have proved to be effective in various health areas, it might also be a solution for WHP. However, there is a lack of knowledge about the requirements employees would have on such an app for WHP. Therefore, 29 semi-structured interviews were conducted with employees and experts of an IT company. Most employees were rather positive about such an app. Concerns were stated in terms of added value and data security. Variations were found in preferred functionalities. Apps might thus be effective for WHP but would need to add value compared to apps available for private usage. Additionally, clear communication about data privacy would be expected.

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INTRODUCTION

In the last decades, employers started to further invest in the well-being of their employees. It is understood to improve productivity, self-perceived health, work ability as well as reduce absenteeism (Rongen, Robroek, van Lenthe, & Burdorf, 2013). Health promotion is one determinant of occupational health that "deals with all aspects of health and safety in the workplace and has a strong focus on primary prevention of hazards" according to the WHO (World Health Organization, 2016). Most programs established at the workplace yet focus on life-style related diseases e.g. lack of physical activity, poor nutrition and unhealthy weight gain (Rongen et al., 2013). For physical activity, a literature review of Malik and colleagues (2014) for instance indicates general effectiveness, even though they argue, that more well-designed studies are necessary (Malik, Blake, & Suggs, 2014). Besides considerations on effectiveness of the program itself, the participation rate in workplace health promotion (WHP) programs is rather low and thus poses a problem for implementations and overall effectiveness. A study reveals a median of only 33% of the employees participated in those programs (Suzan, Robroek, Van Lenthe, Van Empelen, & Burdorf, 2009).

Furthermore, developments such as mobile working, global traveling, and flexible working hours might influence the health of employees (Nijp, Beckers, van de Voorde, Geurts, & Kompier, 2016) and might include need for new health promotion measures. As mobile health (mHealth) is a growing field of research, it can be discussed whether it is effective in ameliorating the low participation rate and including the modern way of working in workplace health promotion (WHP).

However, little is known on the potential effectiveness and usage of mHealth as a means for WHP and more investigations are needed as supported by a literature study on WHP apps (Dehkordi, Breitschwerdt, & Fellmann, 2017). Up to now, some experimental studies have already been conducted on mhealth at the workplace, mainly in the areas of stress management and physical activity, but also among different target groups, such as airplane pilots and healthcare workers. Most of the studies seem to demonstrate effectiveness in decreasing stress and negative effects of shift work and increasing satisfaction (Ahtinen et al., 2013; Guertler, Vandelanotte, Kirwan, & Duncan, 2015; Ly, Asplund, & Andersson, 2014; Paschou et al., 2015; van Drongelen et al., 2014).

However, although most studies demonstrate a high effectiveness, the workplace health apps sometimes do not meet the needs of end-users and participation levels remain low (Muuraiskangas, Harjumaa, Kaipainen, & Ermes, 2016). Still, studies mainly focus on the evaluation of health status improvement as the outcome, whereas the end-user perspective and preferences and eventually the participation rate and reach of the intervention remain unclear.

In order to tackle this lack of information in WHP using technologies, a detailed view of the end-users needs to be evaluated using qualitative research methods (Dunkl & Jiménez, 2017).

In order to provide an overview of end-user's preferences and needs as a guideline for the decision-making process for stakeholders, the following research questions are investigated:

1. What benefits and obstacles do employees see when considering whether to use a workplace health app provided by the employer?
2. What functionalities would employees prefer to have in such an app?

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Background

Some investigations have already been made towards mHealth for WHP and show promising results, but also support the urge for further investigations. So far, studies have been conducted in the area of general health, stress, nutrition, but also weight loss, mindfulness, physical activity and sedentary behaviour and showed mostly positive results (Ahtinen et al., 2013; Bond et al., 2014; Giddens, Leidner, & Gonzalez, 2017; Gilson et al., 2017; Guertler et al., 2015; Lappalainen et al., 2013; Ly et al., 2014; Mattila et al., 2013; Möltner, Leve, & Esch, 2017; Morris et al., 2010; Shahrestani et al., 2017; Simons, Foerster, Bruck, Motiwalla, & Jonker, 2015). Furthermore, besides office workers, airplane pilots, truck drivers and shift workers were in focus (Greenfield et al., 2016; Paschou et al., 2015; van Drongelen, Boot, Hlobil, Smid, & van der Beek, 2016).

A literature review on mHealth studies for physical activity supported the positive findings revealed that most paper report a general positive influence, however often the sample sizes are rather small and thus effect sizes are limited (Buckingham, Williams, Morrissey, Price, & Harrison, 2019). Advantages as the adjustability to the individual needs of the employees, but also the potential integration of different functionalities, health aspects, and preferences present in workplaces are expected (Bardus, Blake, Lloyd, & Suzanne Suggs, 2014; Broding, Kiesel, Lederer, Kötter, & Drexler, 2010). Moreover, studies reveal that the technologies are independent of time and location, are available for usage, and can integrate private and professional lives (Suzan JW Robroek, Lindeboom, & Burdorf, 2012; Simons et al., 2015). This potentially provides a competitive advantage compared to ordinary location-based program for workplace health promotion. Also, even small companies, which usually struggle to implement health and safety measures (Champoux & Brun, 2003), might be able to implement such a mobile intervention with less resources.

However, even though mHealth is theoretically and among pilot studies effective, the general acceptance and participation needs to be guaranteed. Theoretical frameworks were only assessed for general mHealth (independent of the WHP sector) to explain acceptance. One of them is the Health Information Technology Acceptance Model (HITAM); however, it has not been evaluated in the WHP sector (Kim & Park, 2012). Furthermore, only general theories on technology acceptance in health interventions, like the Unified theory of acceptance and use of technology (UTAUT), which is often used in health interventions, can be applied to the field of workplace health. Until now, the UTAUT was used for mobile psychological self-management, for instance (van der Vaart, Atema, & Evers, 2016). Additionally, studies on fitness trackers use the UTAUT/UTAUT2 (Yoganathan & Kajanan, 2014; Yuan, Ma, Kanthawala, & Peng, 2015). However, the acceptance of the general population is yet to be researched (Kenny & Connolly, 2015). General behaviour change theories like the theory of planned behaviour, the health belief model, and the social-cognitive model can be applied.

Whilst only few qualitative studies were conducted to complement that knowledge with WHP specific factors. Dunkl et al. (2017) already quantitatively evaluated the view of employees in leading positions on WHP apps. The study shows that younger leaders in particular support WHP apps, as well as those with a positive attitude towards WHP in general (Dunkl & Jiménez, 2017). This is crucial as they represent the future leaders and people who are used to technologies.

De Korte et al. (2018) have further used qualitative methodologies to evaluate mHealth acceptance in a workplace. They list four main points to be considered: system performance, relevancy and benefits based on characteristics of the users, tailoring to the work context, and privacy and data-related topics (de Korte, Wiezer, Noortje, Janssen, Joris H., Vink, Peter, & Kraaji, Wessel, 2018). Jimenez et al. have

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further developed a life-cycle for eHealth measures at the workplace. In their study they especially emphasize the need for investigations on quality and regulatory assessment also in terms of privacy of those measures, as well as the involvement of different stakeholders (Jimenez & Bregenzer, 2018).

Still, more qualitative, but also experimental research is necessary in order to comprehensively understand the end-users view (Buckingham et al., 2019). This knowledge is necessary in order to build a practical framework for the implementation decision process and the development of such an app in WHP. Additionally, qualitative research is needed to allocate resources in the most effective way before implementing such an intervention or developing such an app.

Methods

In this qualitative study, semi-structured interviews were carried out based on the grounded theory. Predefined question catalogues were utilized to conduct the interviews and execute qualitative content analysis. This method was chosen based on the lack of knowledge regarding users' preferences, needs, and potential obstacles of the usage of mobile applications in the WHP setting and its potential for gathering deep insights into the opinions of the end users. The study was conducted following the consolidated criteria for reporting qualitative research (COREQ). The study design included semi-structured interviews with employees of a German IT company. In total, 29 open-ended interviews were conducted between September 2016 and May 2019. The interviews were audio-recorded and were afterwards transcribed.

Participants

The study population consisted of potential end-users—i.e. employees in the field of IT. All interviewed subjects worked in the same company. The recruiting took place via a personal email containing information on the approximate interview duration, the general topic of occupational health management, but without mentioning any technology or further information. Except of four candidates that were not able to take part in the interview due to time issues, no one refused to take part in the interview. Therefore, it is expected that no bias is included as non-participation was not explained by having no interest in sharing their opinions.

Eventually, the study group consisted of participants of different age groups, gender distribution, perceived health status, educational backgrounds, and job positions. Furthermore, five external consultants were included to represent the modern working environment, which entails multiple locations and flexible working hours. Further, two company doctors, a recruiter, an IT security expert, and two workplace health experts were included to obtain insights into the professional view of this topic.

The details of the study population, including preferences in physical activity and nutrition behaviour, are shown in Table 1.

Data Collection

The data was collected through semi-structured interviews, which are defined as interviews with a pre-determined catalogue of open questions that builds a framework for the interview. The advantage of this qualitative methodology is to get deep insights into the opinion and preferences of the end-user and stakeholders involved in the decision-making process of workplace health. Within this study, all 29 interviews were conducted in separate rooms at the participants' workplace to make it as convenient as

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possible for the participants as well as to avoid disruptions, interactions, or group consensus. One female researcher (MSc) with a background in health sciences conducted all interviews. Mostly, a second scientist was present to review and evaluate interview style. In order to give the participants the opportunity to speak freely in their mother tongue and to capture all relevant aspects all, but one interview were held in German. The statements in this paper were therefore translated from German into English by the authors.

Table 1. Demographics of participants

Characteristics	N	%
Age in years (N =29)		
- ≤ 30	7	24.1
- 31-40	8	27.5
- 41-50	10	34.5
- 50 - 60	3	10.3
- ≥ 61	1	3.4
Gender (N =29)		
- Male	18	62.1
- Female	11	37.9
Perceived health status (N =26)		
- Under average	2	7.7
- Average	19	73.1
- Above average	5	19.2
How much do you like exercising? (N =26)		
- Reluctantly	2	7.7
- I like it	9	34.6
- very much	15	57.7
Do you prefer healthy food? (N =26)		
- No	4	15.4
- Moderately	7	26.9
- Yes	15	57.7
Children (N =27)		
- yes	11	40.7
Usage occupational health means (N =27)		
- Never	7	25.9
- I used to use them, but not anymore	5	18.5
- I use a few means occasionally	13	48.1
- I actively participate on a regular basis	2	7.4
Usage health app (N =27)		
- Never	5	18.5
- I tested it, but don't use it anymore	8	29.6
- Sometimes	5	18.5
- Usage on a regular basis	9	33.3

The structure of the interview was equal of all interviews. It started with a short introduction of the people present and the information on the interview procedure and data usage. Prior to the start of the recording, the interviewees signed the informed consent form. The subjects were informed that they can withdraw any information at any time. Detailed information on the study aim and objectives were only provided after the interview to avoid prior influences of the interviewees. After the introductory part, the interviewer mainly followed four main question blocks. These included first some demographic questions,

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as shown above (Table 1). Following that, the second block focused on definition, usage, and opinion of occupational health measures in the company. The third block comprised questions concerning private health apps usage. In details this included questions on initial motivation for download, experiences, and wishes for the future. At last, the topic of using mobile applications for WHP was addressed. The structure was consciously chosen in order to receive some basic information of the usage and background of the participants, before diving into the main topic of WHP apps. Obviously in most interviews, the last part took the most time.

For the latter questions on WHP apps, the interviewer started with broad questions, asking the participants to imagine a poster with a company health app in the entrance hall and requesting their first thoughts and opinions. Afterwards, preferences for functionality, willingness to share data, and potential usage behaviour were evaluated. On average, the interviews took 20–50 minutes.

Data Analysis

Transcriptions of the interviews were done by three different researchers. All transcriptions were again read by the interviewer to complement the transcriptions with notes, made during the interview, about body gestures. Furthermore, participants' names, the company name, or names of health promotion initiatives, if mentioned in the interview, were replaced by anonymous wordings like 'company x'.

The transcriptions and the audio files were imported to NVivo (by QSR International). and coded therein. Coding means that text passages were subordinated to codes or "nodes" e.g. reasons for initial usage of a health app. The nodes were predefined tuned to the interview guide. The node tree is demonstrated in Figure 1. Additionally, cases (interviews) received classifications regarding their demographics and other characterises.

The individual quotes subordinated to the nodes were then analysed by the researchers. The number of coded text passages per nodes differed between 3 and 71.

The targeted goal of the analysis is to identify factors and relations that influence the acceptance of health technologies in WHP, therefore the study is based on the grounded theory.

Due to the limited number of participants and the qualitative focus of the study, no statistical analyses of the results were done, only demographics and the number of quotes were compared.

Results

Based on the coding of the interviews, some main results can be described. In total, 1,124 quotes were coded. In the following section, the findings are structured according to the blocks and codes shown in Figure 1. First, general health status of the participants will be described, followed by the answers on workplace health promotion usage questions and their health apps usage. Lastly, the results of the questions on WHP apps will be demonstrated.

Health Status

In Table 1 a detailed description of the individual expression of the demographic are demonstrated. Most participants described their health status as average and claimed to enjoy physical activity. While 16 stated that their health is very important to them, another four states that its importance has increased over the years as they got older. Two said that they try to be aware of their health but are sometimes not

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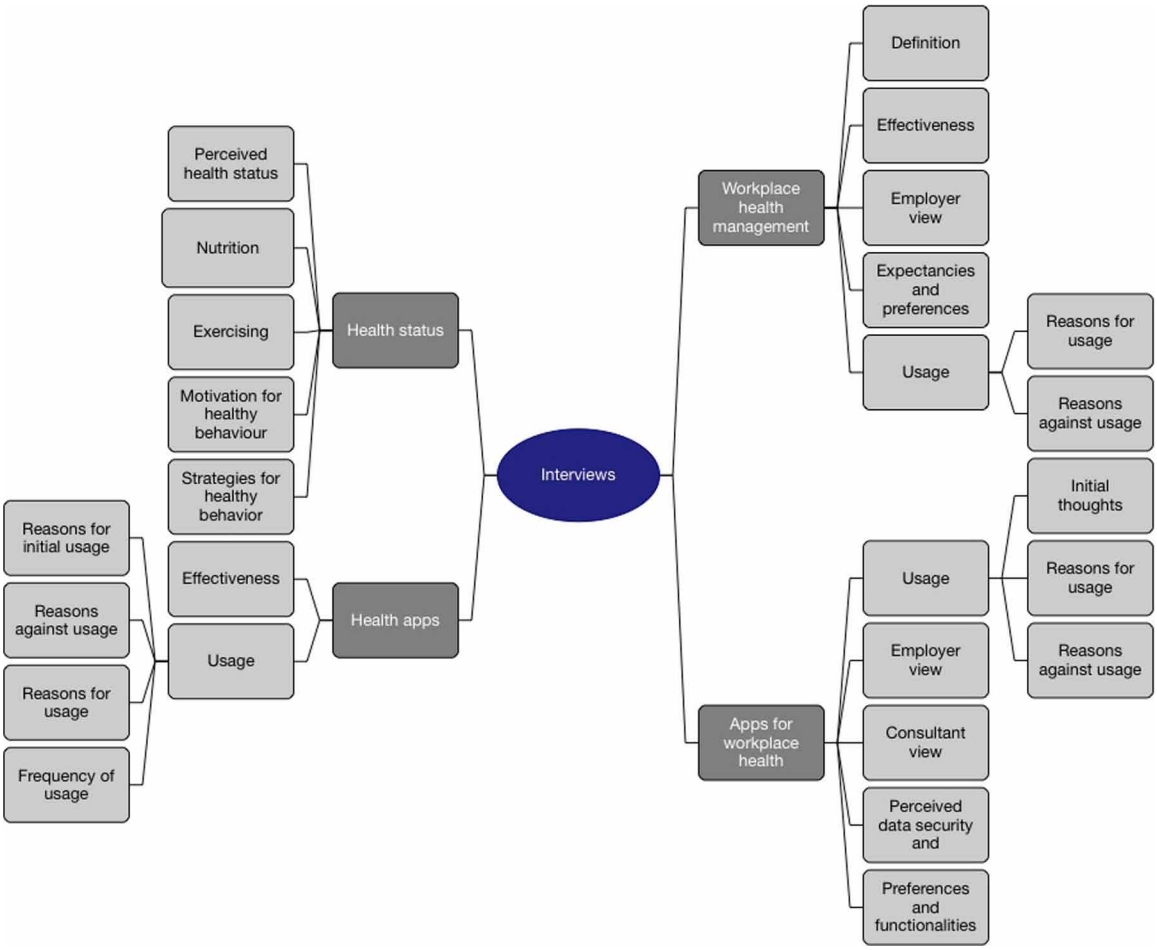
strict about it. Participants' motivation to stay healthy were mainly (in % of participants who mentioned it): to feel fit (44.8%); weight control (27.6%), experiences of health issues in the social environment or past own health issues (13.8%), stress reduction (6.9%), long healthy life (10.3%), increasing age (3.4%). Individual participants also stated the need to have fun, play with their children, feeling bad about their poor health, and wanting to go back to a certain fitness status. Reasons that hindered the participants on investing even more into their health were mainly: time, as also supported by literature as being the most common reason for not participating in health measures (Kruger, Yore, Bauer, & Kohl, 2007), the canteen, unstable weather, not seeing the consequences of unhealthy behaviour immediately, and laziness.

Figure 1. Coding tree



Workplace Health Promotion

The results on the perception of WHP show variations. In total, 18 participants knew about WHP interventions and eight said that they do not know what it is, even though they imagined the right interventions when asked. Still, it became clear that often the individual initiatives were seen separately by the

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participant and not necessary assigned under the umbrella of WHP even though a dedicated name for those programs even existed in the company. As demonstrated in Table 1, only two respondents participated on regular basis in WHP measures, while 13 participants use initiatives irregularly.

Reasons for non-usage of measures were mainly time rosters of activities (34.5%), separation of private and work activities (24.1%), lack of knowledge (17.2%), lack of the right offer (17.2%) culture (10.3%), and not wanting to embarrass oneself in front of colleagues (13.8%). Additionally, lack of communication, information flouting, fear of diagnosis, need for more fun, need for acceptance of others, practical reasons like showering and carrying cloths to work, and mismatch of offers and needs were mentioned. Furthermore, three consultants and a part-time employee mentioned that participation is unrealistic due to flexible working arrangements and new ways of working.

Reasons in favour of the use of WHP measures were time savings, location in general, networking, targeting of the right needs, culture, and cost savings.

From the employer's perspective, represented by expert on the topic, WHP is a means for keeping the employees productive. Further, the company doctor stated that there are governmental regulations to adhere to and any other means are seen as a benefit for the employee. From the point of view of the employer, as represented by the recruiter and the doctors, it is further seen as an important means of image cultivation, which has gained importance over time. The employees responsible for WHP further mentioned that the target group needs to be studied and interventions need to be evaluated regularly.

[…] if you don't have high participation rate in the WHP you have done something wrong […]. Because I think that generally speaking, people have the interest to do something for their health. Either way a majority. Of course, there are those 20–25% whom you can't reach, but I am convinced that you can reach two-third of the employees with the right means.

Participants were further asked to state their expectations for the future as well as address topic most relevant to them. The most commonly mentioned ones were stress management, nutrition, ergonomics, and more communication on the topic to emphasize the seriousness.

What I expect is mostly already provided, general things as for instance ergonomic working places, that we have good chairs, that the monitor is correctly adjusted, that I have modern working equipment, etc. Further that I have sufficient opportunities for healthy nutrition, that the canteen is offering healthy food or some vegetarian days etc. Those things I do expect.

Health Apps

The distribution of the health app usage demonstrates that the participants represented all user habits: Five have never used a health app, eight have used them but stopped, five use the apps from time to time, and nine use it on a regular basis. The used functions were mainly step-counting and activity tracking (34.5%). Six used fitness wristbands and six used apps for nutrition and weight management. Sleep, meditation, and cycling were also mentioned.

Six interviewees state that they used the app for the first time based on the advice of a friend or colleague. Other initial motivators were advertisement, app presence on the phone at time of buying, or just interest in trying it out.

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The functions most mentioned as valuable were self-monitoring, individual time schedule, comparison with friends, and integration of various functions in one app. Furthermore, the participants stated the following reasons for usage: self-monitoring and tracking (37.9%), motivation (13.7%), as well as reflection, the possibility to connect with other apps, and the low effort needed. Reasons against usage were tracking and data (24.1%), a lot of effort in individual typing (17.2%) perceived pressure (10.3%), no interest (10.3%), and technical reasons like battery life, storage, and small screens and factors like fear of frustration, disruption in sports due to calls or messages, and having to carry around one's phone.

Workplace Health Apps

As described in the method section, the last and more comprehensive block of questions, included questions regarding the potential of WHP apps. As an introduction, interviewees were asked to imagine a poster at the entrance hall and their first thoughts and ideas about it. Only after that, they were specifically asked on preferred functionality, advantages and disadvantages.

As mostly advantages and disadvantages were discussed, those are demonstrated in Table 2. In total 135 references were coded for advantages and disadvantages. It revealed, that most participants had rather positive associations. One participant even proposed apps as a new means during the questions about WHP in general. Eight further wished to download the app and then evaluate on its value.

I would think it's a good initiative and would be more interested in looking at it and understanding what exactly it checks and if it's beneficial, I would like to use it.

Table 2. Advantages/disadvantages of WHP apps

Advantages (mentioned by N participants)	**Disadvantages (mentioned by N participants)**
- Condensed and fast information provision (9) - Positive social pressure (6) - Great for technically affine people, especially younger generation (5) - Incentives (4) - Independent of location, applicable for home office (4) - Overview on activities (4) - Added value (3) - Integration to other private and professional platforms (3) - Positive image for the company (3) - Possibility of personalization (3) - Low effort for company (3) - Low effort for employees (2) - Enhanced motivation (2) - Easy to use (2) - Competition (1) - Possibility to integrate more functions over time (1) - Cost savings (1) - Usage of technical possibilities (1)	- Data security (11) - No added value compared to private apps (9) - Already flood of information (4) - Social pressure and stress (4) - Blending of work and private life (4) - Short-term usage (3) - Lack of quality checks (2) - No control on the execution of proposed exercises by colleagues (1) - Lack of regulations (1) - Only fit people would be interested (2) - Additional media (6) - Dependence on technical components e.g. battery (3) - Only for technically affine people (1)

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Only seven stated their general opinion against the app, even though they would still have a look at the app. Rejection of the app were based on their concern about data security in four cases and because interviewees did not see the value in three cases.

First, I would say uhh great, I like it. And then I would be worried about my personal data

Added values were generally mentioned rather frequently. Even though participants were positive in general, they stated that they would only continue using it if it adds value compared to private apps.

This is relatively easy for both sides, for the company and for the employee. You really have the opportunity, with little effort, to give your employees such a small help and to do something good for them. On the other hand, you as an associate are doing it or you are not doing it or you are interested in it or leaving it. But I think that's pretty cool that way.

Besides general analysis of the quotes, some analysis of the argumentations given were compared among the different demographics' characteristics. These reveal interesting results, even though interpretation is difficult, due to the fact that the number of quotes coded by the research does not include information on the assigned weight of the argumentation by the interviewee. Differences were for instance found among men and women. Whereas for women more quotes were coded as advantages of WHP app usage, for men more disadvantages of mHealth usage for WHP were coded. When comparing the different age groups, the age group of interviewees aged 40-50 and those aged 60 or older stated more disadvantages of usage of WHP apps. The same applied for those, who use mHealth privately on a regular basis (25 versus 19 quotes). Additionally, it seems as those participants with children provided more quotes against usage compared to quotes towards (48 compared to 33).

When evaluating, the functionalities proposed by the participants, further interesting results could be withdrawn. The proposed and preferred topics and functionalities mentioned in the interviews as aspects of interests are shown below, along with the numbers of interviewees who expressed interest (Table 3).

During the interviews, it became obvious that different impressions came to the minds of the participants. Eight explicitly mentioned that the app should be personalized. Six additionally said that it needs to be tailored to the company and job requirements. Furthermore, two suggested that the app should include both a possibility to provide information only and deactivate data gathering and a possibility to make it more sophisticated and integrate more personal data. Therefore, both user groups would be served. Additionally, different requirements were mentioned, including full integration of various tracking functions with information, incentives, bonus systems, benefits, and communities, although some participants also mentioned that they don't like games, reminders, or incentives.

It was further emphasized by the interviewees that the app needs to be easy, intuitive, and lively, so that something is happening daily. Often, the added value compared to other apps was mentioned.

[...] it depends on the functionalities with data tracking, without data tracking in any form. I do have full trust in the company when it comes to data integrity, but often these services are being bought or need to be bought and then[...] it depends on what the topics are […] I actually cannot come up with a health app that the company can offer that does not exist yet.

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Table 3. Proposed functionalities of apps for workplace health promotion

Topic	(mentioned by N participants)
Condensed information on local WHP and health topics	15
Nutrition information	12
Challenges/competitions	7
Physical activity tracking	7
Linkage to company's other portals/ platforms	6
Ergonomics and sitting	6

Further proposals for drinking water, travel information, hints for stress, reminder to take breaks, sleeping cycle, and blood pressure tracking were made. In particular, the wish for aggregated information on the WHP program reflects the previously reported need for more information on WHP within the company. From an employer's perspective, WHP apps might also have a positive effect on the recruiting process. Additionally, it was mentioned twice that it should fit the company values and workers (in this case, an IT Company).

'I personally think, this might not be bad, you would have everything on the app, the most important information and this might make the colleagues more sensitive to the topic. There is always the problem that the bosses also need to support it […] there is no value if there is only the app, but it needs to come from above, a certain approach needs to be lived in the company.'

Contrary to our expectations, the recruiter, employee representatives, and the employees responsible for WHP were rather positive concerning usage of such technologies and personally showed no concern about data disclosure. This might be explained by a gap of knowledge between those working in departments, where they experience data handling, and employees who have never been in touch with the handling and thus assume the worst.

Data Security

Generally, an overall judgment of data security and privacy perception were difficult to grasp. Most participants expressed that their perception is highly dependent on the outcome and combination of data required. Seven claimed to trust the company and to expect only positive outcomes when sharing the data in an app. Interestingly, three participants preferred to rather share data directly with the employer than via an external company.

'I personally think that I have more trust in the company than in any other external provider.'

Interviewees further emphasized the need to make an informed decision, meaning that sharing of data would not be a matter of concern if the process of data analysis and sharing is clearly stated. Participants further often stated that they are personally not worried but could imagine others being worried about misuse. Often, participants were torn concerning the data questions—they claimed to trust the company but were still worried. Most probably, this uncertainty arises from a lack of information.

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With my real name, […], even though I fully trust the company, I would have concerns, but on the other hand, there is so much personal data here about me. They know exactly when I work and when I don't work. There are so many regulations, which is why I think I would still use it.

When considering, the experts on WHP, mhealth, and IT Security all affirmed that the company is generally not allowed to save health-related data of employees; thus, the app would need to be externally hosted and only anonymized information would be provided to employers. Additionally, according to data security expert, the app needs to be adjustable according to the willingness to share personal data in order to integrate most employees. However, they all agree that laws and regulations required to successfully implement it are currently not in place.

Consultants

In order to evaluate the impact of these technologies on the modern way of working, consultants currently working in the same company were interviewed. Of course, they recognized their special situation and had a positive view of technological support to receive more information concerning health issues—especially information adjusted to the needs of a consultant, like information about the current workplace or information which can be used independently from the working slot is considered as important. One participant, however, clearly stated his concern about data.

I mean of course, you would need to find out what the particularities are, when people are often commuting, there are small aids, like 'how can I do something' … for fifteen minutes, something to feel better, … how can I do exercises for relaxation, if I know there will be something stressful ... And thus, a small hint, a small guidance. So, in this direction especially, I am sure that helps.

This information provides a direction for future research and practice, as the increasing global interaction and modern way of working enhance the need for those kinds of measures.

Overall

Conclusively, it was retrieved that employees are generally open for WHP apps, provided they are able to control their data-sharing and the app can be tailored to their own needs and preferences. Experts emphasize the future development of such apps and the formation of habits around technologies and thus believe that the working population will be better at coping with the information flood and the usage of such technologies. The health experts further expressed the need for personal contact and for regulation concerning data and usage during working hours. Further, it became clear that the app would not be the only initiative or measure for cultural change and that a convenient working environment needs to be established. As the last point, the researchers notice no difference over time—especially for data security, which seems to depend on personal opinion.

Discussion

This study is among the first to qualitatively evaluate the usage of mhealth for WHP. Previous studies have emphasized the need for this qualitative evaluation of the perception of end-users (de Korte et al., 2018;

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Dunkl & Jiménez, 2017). Often, the interventions of WHP do not meet the needs of the end-consumers, thus limiting the reach; hence, end consumer evaluations are extremely important (Rongen et al., 2014).

The study comprises 29 semi-structured interviews with employees in order to receive a comprehensive view of the topic in one company. The demographics varied and thus represents a common working force in regards to age, health status, and interest in health technologies. Additionally, the usage of health apps in private lives differed. Most of the employees have tried those apps, but only few used it on a regular basis. As in most other companies, the need for investigations in WHP was supported by the interviews, as most employees were not aware of the program and just knew several independent initiatives.

Barriers to participation were mainly reported to be lack of information, lack of time, and lack of interest as it did not meet their preferences or they preferred doing personal activities without using technology, as already supported by other studies (Bardus et al., 2014; Suzan JW Robroek et al., 2012).

In terms of WHP apps, a high level of interest was demonstrated. Most employees would try the app despite having concerns about the added value and the data security. The overall trust thus seems to play a big role in acceptance, as discussed by Mettler et al. (2019). However, it seems that the app needs to be well-developed in order to convince users (Mettler, T & Wulf, J, 2019). This positive opinion about apps for WHP was reported by employees who had various previous experiences with WHP and health apps. Furthermore, the answers showed no direct links to age, gender, or health status, implying that apps are useful for different characteristics even though differences in the number of quotes including advantages and disadvantages were found.

When considering the proposed functionalities, it became obvious that the lack of information concerning WHP was one of the most important points. Additionally, physical health and nutrition tracking were favoured. Apart from this, challenges and competition were discussed. Many employees were in favour of it, whereas others did not want to share their personal data with colleagues to avoid social pressure. Those kinds of incentives and gamification have already been discussed in the literature and often shown effective results. Although they have not yet been tested in the workplace, their effect can be deduced from contexts like chronic disease management via apps (Miller, Cafazzo, & Seto, 2016). Again, these functionalities would need to be voluntary in order to reduce negative social pressure. A previous study on workplace health apps supports the tailoring to the work context. In our study, however, the added value compared to other privately used apps was more often mentioned (de Korte et al., 2018).

In terms of perceived data security, a lack of research is identified. Even though it seems to be a big issue of concern, little about it is found in the literature. Additionally, an interesting finding during the interviews is that employer representatives—like recruiter, WHP experts, employee representatives, and the IT expert—were less concerned about sharing the data as they had sufficient knowledge about the handling of the data and regulations concerning data handling compared to other employees.

This is further supported by Dunkl et al. (2017), who report positive opinions of leaders towards mhealth apps for WHP (Dunkl & Jiménez, 2017).

In conclusion, it can be stated that providing detailed information on the data handling process might enhance the acceptance of such a technology (Dockweiler & Razum, 2016).

Limitations of the Study

The study is limited by the chosen methodology. First, it needs to be stated that the interviews were conducted in only one company in order to compare results on the basis of the current status of WHP. Furthermore, the interviews only included German-speaking participants, limiting the generalizability to

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Germany, even though the company operates globally. The general positive view of technologies among the participants might also be because they are employed at an IT company. Besides those limitations, common limitations for semi-structured interviews also apply to our study. Due to the small sample size compared to quantitative studies, no statistical tests were conducted. Therefore, results rely on the interpretation of the researchers and the study population rather than on objective results. Besides, the sample cannot be tested for representativeness on another sample. Still, this method allows deep dive insights into the opinions of potential users and thus provided advantages compared to quantitative results. Of course, statistical validation of our found results is desired for the future.

Future Work

Based on the findings described above further investigations into mHealth for workplace health promotion are necessary. Obviously, potential user groups show a general interest in using these media for health measures. Further scientific studies would therefore be necessary to evaluate acceptance factors, potential effectiveness and eventually actual usage of mHealth. In order to complement the methodology utilized in this study, quantitative studies as well as comprehensive field tests or RCTs on effectiveness would be necessary to research that field. As the field of data disclosure seem to be of high relevance among the study group, investigations into that field would further be appreciated.

CONCLUSION

The initial decision to download an app seems to arise from a general interest in technologies, data security perception, perceived value, and support from supervisors.

For a practical implication, it is thus recommended to prepare a comprehensive communication about the app, data usage, and the added value. The app would need to integrate various functionalities and contents, which can be adjusted to the needs and preferences of the end-users in order to add value for many employees compared to private apps. Despite the limitations of the methodology, the study gives directions for future usage of mhealth as WHP as well as research. Generally, most participants were positive about mhealth, even though doubts concerning added value compared to the current market and data security concerns were shared. Additionally, the data security concern seems to arise from a lack of information, as representatives of the employer and experts were less concerned.

Future research should deal with acceptance, preferences, practical testing, and incentives to further increase interest.

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Chapter 35
Health and Wellbeing as Appreciative Inquiry in a Private University in Mexico

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ABSTRACT

Appreciative inquiry (AI) has been used to promote positive change in different areas of organizational life. It is based on the 4D cycle which includes four distinct stages: discover, dream, design, and destiny. Organizational wellbeing is both a strategy and a responsibility, especially in recent times, when the line between work and life seems to be blurring, and there has been an increased concern about the role that work plays in the health and wellbeing of employees. AI is substantially different from other institutional analysis methodologies because it is not focused on solving problems, but on the positive aspects of organizational life and culture. This chapter presents the case of a private university in Puebla, Mexico, which has been promoting holistic programs to improve employees' wellbeing and happiness, reducing stress and other potential health problems through appreciative inquiry on what members dream, long for, and aspire in terms of better overall health. It is a descriptive study that presents a specific case.

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INTRODUCTION

The traditional approach to organizational development programs has focused on creating remedies to a variety of problems in an attempt to generate positive change (Cumming & Worle, 2015). By contrast, Appreciative Inquiry is an organizational change method (Cooperrider, & Avital, 2004) that focuses on the positive aspects of an organization rather than on its problems, identifying and valuing what is good, and investigating about it (Reed 2006; Cooperrider & Srivasta, 2017). Appreciative Inquiries are conducted through the analysis of four phases known as the 4 Ds: Discover. Dream, Design, and, Destiny (Cram, 2010).

Organizations are currently facing complex and ever-changing environments (Cooperrider & Srivasta, 2017) in which uncertainty, job insecurity and instability prevail. Globalization, competitiveness, continuous technological advances, increased automatization, and digitalization have led to increased demands resulting in overwhelmed employees living in increasingly stressful settings (Kleber & van Der Velden, 2009). Rewards and development programs have been modified to promote employee happiness and wellbeing (Grant, Christianson & Price, 2007), thus improving all aspects of their lives.

More than ever organizations are becoming centers of vital connections. While life-giving health programs were originally designed to reduce insurance costs (Lockwood, 2003), they have become an important element in business missions and visions to improve employee productivity (Kirsten, 2010) and retention (Sears, Shi, Coberley & Pope, 2013). Healthy organizations develop good practices (Corbett, 2004), and a culture and climate that can promote employee health and safety through actions directed to the individual, the group, the organization, and inter-organizational processes (Di Fabio, 2017), resulting in a positive revolution on organizational development and change management (Cooperrider & Whitney, 2001).

The World Health Organization (WHO, 2019) has suggested that among the risks of mental health, the following can be positioned in the lead: Inadequate security and health promotion policies, inefficient management and communication practices, lack of decision-making authority, lack of control over their working area, low level of employee support, rigid working hours, and lack of clarity about areas and organizational goals. It is precisely in this context that healthy organizations have emerged (Di Fabio, 2017).

Wellbeing programs that focus on strengthening practices have resulted positive in maintaining a healthy environment (Di Fabio & Peiró, 2018). The Pan American Health Organization (PAHO, 2017) has explained that Mexico designed a strategy to promote healthy work settings that are free of violence, that address psychosocial factors, and that promote emotional well-being to generate healthy work habits, and that the strategy is being promoted through active social dialogue, consensus mechanisms, and research and training.

Numerous studies have demonstrated that when experimenting stress continuously, people become less creative and less productive; bad decision are made, and engagement with the organization is eventually lost (Maslach & Leiter, 2008). When this happens, businesses risk their competitiveness (Peterson & Wilson, 2002).

A Higher Education Institution (HEI) was selected for the analysis, since there are very few studies that have been performed in the area of education (Van Straaten, du Plessis & van Tonder, 2016), particularly in relation to the wellbeing of employees (faculty and administrative); and, with no studies of the kind found in Mexico, an interesting area of research has been identified.

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UPAEP is a HEI in which the promotion of human dignity, freedom, solidarity, subsidiarity, congruence, respect, love, and justice are the leading values. The institution strongly believes that the support for successful organizations are the people and the organizational climate (Glisson, 2015); that in a supportive environment workers feel better and are healthier, and that this leads to reduced absenteeism, increased motivation, more productivity, less turnover, a more positive image, and a consistent corporate social responsibility (Berry et al, 2010). In correspondence with these values, UPAEP has developed numerous initiatives oriented towards the consolidation of a healthy organizational culture that increases awareness among collaborators to prevent health risk factors through the practice of healthy habits and a variety of activities that contribute to the improvement of their quality of life.

The "Transform your health" program (*Transforma tu salud*) has been designed to transform the health of all collaborators through healthy habit formation in a prevention culture that will result in better work performance. The objective is to promote a culture of prevention and conscience among collaborators to reduce health risk factors through holistic practices and activities that contribute to the improvement of their quality of life (Ortiz, 2018). It is an integral flexible and friendly program that offers a wide variety of activities, including medical evaluation twice a year, lab tests on cholesterol, glucose and triglycerides, nutritionist evaluation, physiotherapy and dental care.

Evaluation makes it possible to collect data about participants, who establish a personal goal to improve their health and select from different activities that they would like to engage in, in order to achieve their goals. Every activity they participate in adds points, and every year a prize is awarded to the person who took better care of his/ her own health. The program offers a variety of activities that are related to sports, entertainment, emotional support, and preventive health.

APPRECIATIVE INQUIRY (AI)

Appreciative Inquiry (AI) can be analyzed from two different approaches: the first is the AI paradigm in itself, or the principles and theories behind a strength-based change approach; and, the second, AI methodologies and initiatives, or the specific techniques and operational steps that are used to bring about positive change (Cooperrider & Associates, 2019.)

It is a form of action research that originated in the United States in the mid-1980s, with the works of David Cooperrider and his colleagues in Western Reserve University (Cooperrider, et.al. 2005; Varona, 2007; Losada, 2013; Bello, 2010; Bushe, 2012). AI studies the positive attributes of organizations to create new conversations among people as they work together for organizational change (Serrat, 2008). It is a process of collaborative search centered on the positive core of the organization: its competences, skills, talents and best practices (Cooperrider, 2005). Furthermore, Preskill & Tzavaras Catsambas (2006:1) have defined AI as a group-process that inquiries into, identifies, and further develops the best of "what is" in organizations in order to create a better future. It is a knowledge philosophy, a change methodology and a leadership method; a worldview that builds on action research, organizational learning, and organizational change (Trajkovski, Schmied, Vickers, & Jackson, 2013), shifting the focus from a problem-based research paradigm to a positive theory of inquiry based on future possibilities and performance (Koster & Lemelin 2009).

Serrat (2008) has suggested that AI is based on the ideas that organizations are not machines but rather a social reality which is co-constructed, and that the important organizational processes of com-

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municating, decision making, and managing conflict, hinge on how the people involved make meaning out of their interactions.

It is an invitation toward the development of a positive revolution that begins within oneself and that makes it possible to establish a new way of being and acting. It employs the concepts of positive psychology to engage and encourage strengths and overcome weaknesses (Kowlasky, 2008). It is a proposal to establish an organizational culture in which knowledge is created, shared and implemented in an intentional, active and disciplined manner; a methodology to promote social change, in which theory, practice and intervention converge (Varona, 2007).

AI reflects the way in which people inquire together into the infinite potentials and varieties of human organizing, co-constructing the conversation, analyzing the ways in which it is done, and the realities that emerge from it, both individually and collectively (Fitzgerald, Oliver, & Hoxsey, 2010). It has a transformational nature, based on the changes in the identity of a system and the qualitative changes in the state of that system, with observable outcomes including the development of new knowledge, models and /or theories, and which results in a generative metaphor that compels new action (Bushe & Kassam, 2005).

Appreciative Inquiry aligns with critical social theory, therefore supporting an egalitarian form of open dialogue, empowering practitioners to become change agents and to explore innovative practice (Hung et al., 2018); it has been claimed to have numerous applications, such as coaching and mentoring, positive culture change, and service delivery in education, health and the social services (McAllister & Luckcock, 2009). It uses different tools and techniques, including storytelling (Richards, 2016).

The starting point and the basis of AI is the human ability and potential to learn; it aims at stimulating the organizational and teams capability to collaborate, imagine, discover and promote innovation, with an emphasis that does not rely too much on the identification, diagnosis and solution to problems, difficulties and on what the organization lack, but more on the positive: the qualities and strengths of the system, living experiences of excellence as described by its members, the discovery and the development of hidden possibilities, and positive change (Losada, 2013; Varona, 2007; Bello, 2010).

AI facilitates connectedness, promotes resilience, and contributes to professional identity formation in an authentic environment (Butani & Plant, 2016). It has been used in a diversity of sectors and activities; and has been analyzed for career development, decision making and for understanding the realities of the workforce (Schutt, 2018) to develop employees public speaking skills (Mehta, 2018); to cultivate change in higher education (Filolt & Lander, 2013); for responsible evaluation (Haar & Hoskin, 2004); research practice development (Hung, 2017); service learning courses (Jones-Eversley, Harnekhall & Vejar, 2018); collaborative research (Lundgren & Jansson, 2016); to manage different generations (Ohmer, Barclay & Mekel, 2018); and even, professional use of social media (Pereira, Winningham, Moreau, Scherbino & Jalali, 2015).

With regards to health improvement and health care environments (Fitzpatrick, 2016), including care in home setting (Dewar & MacBride, 2017), the AI approach has been used to develop weight management programs for children (Teevale & Kaholokula, 2018); for stress management (Ravalier, McVicar, & Munn-Giddings, 2018); to bridge research and practice in hospital settings (Hung, Phinney, Chaudhury, Rodney, Tabamo, & Bohl, 2018); to improve medical education (Sandars, & Murdoch-Eaton, 2017); healthcare education and training (Rider, Comeau, Troug, Boyer & Meyer, 2019); and in nurse educator's exam practices (O'Rae, Hnatyshyn, Beck, Mannion, & Patel, 2018), among others.

Appreciative inquiry has been randomly analyzed in Higher Education Institutions (HIEs): Van Straaten, Du Pleissis & van Tonder (2016) have suggested that limited studies have been done on the wellbeing of staff at HEIs. In British universities it has been used to incorporate solidarity to mitigate

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marginalized young people (Inchley, Dar, Pujara & Baker, 2019). It has also been used in order to determine the motives for teacher migration in Africa (Hlalele & Mashiya, 2019), and to understand the connection between teaching practices and students wellbeing in Canada (Lane, Teng, Barnes, Moore, Smith & Lee, 2018).

In HEIs across the world, emphasis has been placed on teaching practices for humanizing and expanding education networks (Rogers, 2019) and to support students' wellbeing (Lane, Teng, Barnes, Moore, Smith & Lee, 2018); tending to disabled students' needs (Dent, 2019); improving management education for future managers in business schools (Peterin & Gravin Pranicevic, 2019); developing business school graduates attributes for future employment (Allen & Simpson, 2019); analyzing burnout in medical school students (Bitran, Zuñiga, Pedrals, Echeverría, Vergara, Rigotti & Puscher, 2019); providing community support (Scmied, Burns & Shehan, 2019), and supporting staff in various factors related to their wellbeing (Field & Buitendach, 2011).

Stages of AI

The model most associated to AI had an interesting evolution. It is based on the assumptions that ways of organizing are limited only by human imagination and the agreements people make with each other. It seeks to create processes of inquiry that will result in better, more effective, convivial, sustainable, and vital social systems (Kessler, 2013).

The original method, developed by Cooperrider & Srivastva (1987), was based on four principles, and called for a collective discovery process using grounded observations to identify: the best of what is; vision and logic to identify ideals of what might be; collaborative dialogue and choice to achieve consent about what should be; and, collective experimentation to discover what can be. In 1995, the notions of Dream and Destiny were introduced, and, in 1997, the Design and the Delivery phases were added (Bushe, 2012).

AI supposes the application of a process that is both rigorous and flexible, and is based on forum stages as shown in Table 1. The first one is about the DISCOVERY of the things that give life to an organization. The second, DREAM, is about what the organization might be; the third, DESIGN, is what should be, and the fourth is DESTINY, sustaining what should be the envisioned future (Cooperrider & Whitney, 2005).

Table 1. Stages in the process of AI

Stage	Goals	Tasks
1. Discover	Identifying what gives life to the organization appreciating and valuing what is best of what is or has been	Conduct appreciative interviews.
2. Dream	Envisioning 'what might be', affirmative exploration	Formulating aspirational declarations (the dream-the vision)
3. Design	Co-constructing 'what should be', the ideal	Formulating provocative propositions (the design of a new organization)
4. Destiny	Sustaining what will be, envisioned future	Define, plan and execute the programs that will make the dream come true- the vision

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Authors such as Mohr (2018); Cooperrider, et.al. (2003, 2005); and Varona (2007) suggest that there is a fifth D, that of Definition, because it establishes the initial focus and scope of the inquiry.

The four stages are described as follows:

- **DISCOVER:** In this stage, all the factors that give life to an organization and the best that the organization has with regards to the topic chosen from the intervention are explored. It is about discovering what people value, expect and desire based on the chosen topic, and identifying the positives within the organization. The method used to discover what an organization has is the Appreciative Interview. This type of inquiry supposes the art of making appreciative questions that stimulate the positive potential that exist in people and in organizations. The appreciative interview is the heart of AI.
- **DREAM**: This stage is about identifying what could be. It invites participants to be creative, and to think beyond the boundaries of past processes and experiences. This is a practical stage, as it is supported on what already exists, and it is also generative, since it expands the organization's potential by creating something new and improved. The realization of this stage should generate collaborative energy and enthusiasm among participants. Furthermore, the power of imagining what is required in this stage is a competency, a gift which is not easy to obtain but which can be developed through practice, specifically when collaborating in teams: It is all about what might be.
- **DESIGN:** In this stage the ideal organization is designed in relation with the world that surrounds it. It is about finding the preferred future, whose design is based on the discovery of positive components and shared dreams; it is based on answering the question: How would our organization be if we designed it in a way in which it could achieve all possibilities and help speed the realization of our dreams? In this stage the goal is to identify the elements (factors) of organizational culture (values, beliefs, rites, etc.), and the elements (factors) of organizational infrastructure (practices, systems, structures, policies, etc.) that support the cultural factors needed to build the dream. The identification of these cultural and structural elements is based on the aspirational declarations that were formulated on the earlier dream stage. The pillars for the construction of the dream emerge from these aspiration propositions that constitute the vision of what is expected based on the selected topic. Once the pillars have been defined, provocative propositions need to be formulated. These propositions integrate the elements (factors) of culture and organizational infrastructure that are essential to make the dream come true.
- **DESTINY:** The goal in this stage is to ensure that the dream can be realized by identifying and planning the programs (projects) and the type of actions (methods) that need to be deployed to implement the provocative propositions from the last stage. In this stage, the underlying question is which programs need to be implemented to ensure that the organization executes and maintains provocative propositions? It relates to the empowering of the creativity inherent in the individuals within the organization to achieve that which has been designed based on positive change.

Finally, the team responsible for the execution, accompaniment and evaluation of the programs is appointed. The plan to communicate the process to the organization and the results of AI is defined. According to Varona (2007), the success of the four-stage process relies on certain essential elements which constitute the spirit and soul that give life to a process that includes a genuine desire to change and improve; participation and commitment of all members; creating a narrative-rich communication;

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establishing a discipline culture; creating a new knowledge of excellence, and developing appreciative intelligence and perseverance.

AI does not go on without problems or limitations. Oliver (2005) has suggested that a common concern is that a focus on positive stories and experiences during the discovery phase will invalidate the negative organizational experiences of participants and repress important and meaningful conversations that need to take place (Bushe, 2012). Furthermore, Pratt (2002) identified limitations in asking participants to inquire appreciatively in systems with unexpressed resentments, something that might invalidate AI.

ORGANIZATIONAL HEALTH AND WELLBEING

Emotional tiredness, or burnout (Gunderman, 2019) derived from stress, generates a series of negative consequences to the physical psychological working and social-familiar health (Amutio, et.al., 2008). Employees are frequently sick, are less motivated, have a low performance, and there is a high possibility that they abandon their jobs. Besides, organizations with these conditions have low expectations of success in competitive markets (Calderón, et.al., 2017; World Health Organization, 2004). Facing these circumstances, organizational wellbeing acquires relevance for organizations as it has been shown that there is a direct correlation between job satisfaction and the continuous search for better conditions that improve organizational life quality. (Calderón, et.al., 2003).

Organizational wellbeing results from a process in which the individual evaluates the balance between expectations and achievements in his work, as well as the balance between expectations and achievements in his personal life and other contexts (Clark, Oswald & Warr, 1996 in Calderón, et.al., 2017).

The concept of wellbeing has been developing and adapting to new organizational dynamics that have emerged. In the 70s, this concept was associated with the notion of Quality of Work Life (QWL) (Bedoya, et.al., 2016).

QWL refers to the positive or negative character of a working environment. It is aimed to create an excellent environment for employees and to contribute to the organization's economic health (Guízar, 2008; Sirgy, et.al., 2001; Igbaria, et.al., 1994; Subbarayalu, & AI Kuwuaiti, 2019).

Workers are able to become better citizens through adequate work supervision, challenging jobs, harmonious organizational climate, holistic development, work enrichment, acknowledgement, recognition, through developing new skills, through reduction of organizational stress, and by establishing more cooperative relations (Guízar, 2008).

The notion of organizational wellbeing and QWL have become relevant study topics in numerous areas of science in which the most recurrent concepts have been related to management, public environmental occupational health, business, psychology, nursing, industrial relations labor, social sciences, sociology, computer science and information systems, social work, education, ethics, environmental, among others (Web of Science, 2019).

An organization's health includes all factors within an organization that encourage a healthy workforce. Health of organizations improves when cared for, and deteriorates when ignored, thus signifying the importance of employees' well-being for business profitability (De Smet, Loch & Schaninger, 2007).

Healthy organization and healthy business create positive attitudes inside organizations. These organizations have the right balance between their particular situation, sector and culture, and place importance on wellbeing and sustainability. A healthy organization can be defined as being characterized by intentional, systematic, and collaborative efforts to maximize employee well-being and productivity by

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providing well-designed and meaningful jobs, a supportive social–organizational environment, and accessible and equitable opportunities for career and work–life enhancement (Wilson, DeJoy, Vandenberg, Richardson, & McGrath, 2004).

Different aspects of employees work life, including productivity, performance, job satisfaction and organizational commitment, are influenced by various factors related to their well-being comprising work stress, degree of job control by individual employees, conflict between work and life, and lack of organizational support (Halpern, 2005). Weiss & Cropanzano (1996) have suggested that employee wellbeing is related to specific outcomes such as a decision to remain in the job or resign, absenteeism, distress, job satisfaction and others.

According to Cartwright & Cooper, (2009), the success of an organization is invariably judged on the basis of its financial performance and its ability to provide high-quality goods and services over time. In a changing internal and external environment, the financial health of an organization is increasingly dependent on the extent to which an organization and its members are able to transform and adapt to these changing circumstances more effectively than their competitors. Physical health and well-being are determined by a range of social, psychological, and biological factors and are conceptualized as resources that allow people to lead individually, socially, and economically productive lives.

Health has been identified as a key driver of socio-economic progress internationally (Houtman & Jettinghoff 2007) highlighting the link between the health of individual workers and the overall performance of an organization. The creation of healthy work environments is an ethical imperative of corporate responsibility: treat employees with respect, avoiding harm, and developing their health potential, is doing the right thing, which results in increased productivity and effectiveness (Ibermutuamur, 2014).

The American College of Occupational and Environmental Medicine (ACOEM, 2019) argues that labor welfare programs not only have a positive impact on productivity for its ability to reduce damage from work and to improve the worker's health, but also favor the optimization of technical and medical resources related to health management in a company

Understanding the socio-cultural element in an organization is a responsibility of the people in charge of managing them (Calderón, & Murillo & Torres 2003), since it implies understanding the relationship of the persons with the organization, their attitudes, expectations and aspirations.

The theme of well-being in the working environment can be observed from a particular point of view, stemming from which well-being itself is recognizable as the result of interaction between the characteristics of the individual and those of the working context, contrary to the assumption that well-being in the workplace depends exclusively on external conditions in terms of the working and organizational environment within which the individual operates (Burke, 1993; Lawson, Noblet, & Rodwell, 2009).

As a consequence of globalization, workers today experience greater job insecurity as well as the negative effects of the introduction of information technology, such as long hours of work at visual display terminals, something that can be detrimental to their health. Robots and other computer-assisted technologies taking over tasks previously performed by human beings add to workers' concern about the future of jobs and wages. Both the psychological and physical well-being of workers are thus under threat. The instability and insecurity in today's world of work calls for the promotion of healthy organizations and healthy businesses as part of a primary prevention approach (Kenny & Hage, 2009; Di Fabio & Kenny, 2015, 2016). A major challenge in the 21st century is to create healthier societies by promoting healthy organizations (Di Fabio, 2017, Di Fabio et.al., 2016).

In healthy organizations, culture, climate, and good practices create an environment that can promote employee health and safety as well as organizational effectiveness (Lowe, 2010). From a positive

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psychology point of view, the four factors in a healthy organization that need to be considered are the individual, the group, the organization, and inter-organizational processes.

A positive primary preventive approach (Di Fabio & Kenny, 2016; Di Fabio et al., 2016) can be fostered in organizational contexts based on efforts to increase employees' resources (Seligman, 2002; Di Fabio et al., 2014, 2016). Primary prevention (Caplan, 1964) stresses the importance of preventing the development of a problem before it starts and of promoting psychological well-being. The focus is thus on building the strengths of employees/workers.

The World Health Organization (2017) has suggested that health is a state of complete physical, mental, spiritual and social well-being. Healthy employees tend to lead a happy and productive life; they can be characterized as vigorous, flourishing, robust, thriving, resilient, and fit (Raya, & Panneerselvam, 2013). A healthy organization leads to a healthy and successful business (De Smet, Loch & Schaninger, 2007). Interest in healthy work organization has grown substantially in the last decades, especially in defining the basic aspects of healthy work organization and the assessment of organizational activities and policies that have an influence on occupational safety and health issues (Shannon, Robson & Sale 2001). Burnout syndrome and stress are among the most common topics (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001).

Healthy organizations need to create the right balance in their particular situation, sector, and culture, highlighting the importance of well-being and sustainability (Di Fabio, 2017). Adkins, Quick & Moe, (2000) have proposed four guiding principles of organizational health:

1) Health exists on a continuum from mortality to vibrant well-being. It is a continuous quest to promote positive health outcomes.
2) Organizational health is not an obtainable state. Constant attention, evaluation, and action are needed to maintain a healthy workplace.
3) Organizational health is the result of interconnections between multiple factors, and it can only be achieved if all of its parts are free from disease.
4) Organizational health relies on fulfilling relationships; therefore, communication, collaboration, and relationship-building are essential.

Healthy organizations are based on different factors. Henry (2005) suggests there are four, the individual, the group, the organization and interorganizational processes. The individual factor includes improvements in psychological health, job enrichment, employment motivation, and feedback, resulting in increased participation; the group factor in a healthy organization is based on the respect for its members, taking time to listen to their views, tolerating different styles and aims for win-win situations. The focus is on team building, group training and positive interactions; the organizational factor includes openness to challenges on making the organization a more efficient and happy place to work with an open culture; and an additional factor, as suggested by Di Fabrio (2017), is the inter-organizational factor, which is based on relations established with other organizations: partnerships, networking and community involvement.

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APPRECIATIVE INQUIRY FOR HEALTH IMPROVEMENT AT UPAEP

At the UPAEP, the Organizational Wellbeing Department aims to create a healthy and productive working environment, to promote the physical, mental, emotional, and spiritual health of employees and their families, as well as to increase the sense of belonging to the institution.

Through the years, numerous programs and activities have been developed to improve the wellbeing of employees. The interest in analyzing how to improve the health and wellbeing at UPAEP started back in 2011. Before the first challenges were identified, the university, and particularly Organizational Wellbeing Department, conducted different inquiries. There was interest in promoting better health habits for all members. It was defined that health and personal transformation should be the topic that would lead all efforts for the future. The main objective was to create a health oriented culture that would result in positive effects in commitment to the organization and also in increased productivity.

The first efforts towards a comprehensive health and wellbeing program resulted in a project called *A Challenge for your health,* in 2014. It was a pilot program to encourage members to participate in different physical activities offered at the university.

From 2015 to 2018, three events were held and the name of the program was changed to *Health Challenges.* These initiatives were developed as specific health-improvement projects by the Organizational Wellbeing Department in collaboration with different areas and departments in the university, including Nutrition, Psychology, Medicine, Physiotherapy, Nursing, Odontology, Arts, Physical education and sports, Training and human development, Internal communication, Innovation and development, IT, and the integral health and odontology clinics, in order to develop a program that could be the driver of a prevention and health culture in the university community (UPAEP, 2018b).

The program was developed as a team challenge. Teams of ten members had to be created by the participants, with the additional goal to promote team integration and closer relationships among peers. The problems this program encountered was that the objectives and goals of the members in a given team were not completely aligned and there were also some teams in which all participants were high level athletes, something that created disparity between teams, this left certain groups feeling they were at a disadvantage, and, as a result, the interest and commitment were lost. The efforts led to increasing consciousness about the importance of taking care on one health and how this affects not only our work, but in general the life of each member (UPAEP 2019).

During the three team-based health challenges, the activities offered to all participants were divided as follows: 53% physical activities, 22% emotional health, 15% prevention, 6% nutrition, and 4% family health.

In an attempt to improve the program and to create "something" that would suit personal and organizational objectives, the department decided to conduct a session of AI in order to obtain vital information about what people desire and to identify best practices of the previous projects. The topic of transforming the health of all organizational members was the constant, based on the idea of creating and sustaining a health culture.

With this in mind, the AI inquiry started with the **Discovery stage** looking into the past of the organization and the programs directed to improve personal health and wellbeing. Groups coming from different areas were invited to participate in different sessions. There were focus groups and also individual inquiries which helped collect numerous personal stories about their pathways to improve their health. The participants were divided in groups of 6-8 members. The facilitator introduced the topic, explaining how the groups should proceed, and asked for volunteers in each group to become the reporters.

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Each reporter would capture memorable personal stories, quotes, provocative propositions, and all the information about each member's participation.

During the three sessions that were held, the facilitators explained the ground rules for AI, describing the participation required from all members. They were told that they were in a safe space in which all ideas were equally valued and needed to create a general perspective. Rules about respecting others when speaking and about respecting assigned times were also explained. Everyone was asked to keep an open mind.

Questions were launched in a positive manner, and they were done focusing on personal experiences. The questions that started the discussion were the following:

- What are the fundamental factors that give life to the health challenge in the organization and which the organization cannot do without?
- Describe the experience of the health challenge programs in which you felt proud of yourself.
- What do you value the most from the offerings of health and wellbeing promotion at work? Why?
- What are your favorite activities from the health challenge offering?
- What times do you find to be more suitable for activities that will help improve your health and wellbeing?

For the second stage, **Dream,** participants were asked to review the positive core, the best practices, ideas, opinions, and experiences from the last stage, and with that information the group started to build new ideas and the dream of what the ideal health and wellbeing program would be like. Questions addressed the way in which the members expected the program to be for the future, the things it should include or not, whether it should cost, and the time frame for the activities, among other topics.

The most important response towards improving the health challenge was to modify it making it an individual project so that the main problems of not being able to align multiple objectives could be eliminated. Numerous proposals were made about additional activities that could be included: The challenge should go digital; people should be allowed to do certain activities from home; family should also be included; changes in the prizes and awards, including having days off for the winners; activities should be done during work schedule; spaces and furniture should be improved, better equipment was needed, services for those with a specific handicap should also be offered; better offering of healthy food and beverage choices; sportswear and uniforms should be provided free of charge.

For the third stage, **Design**, the university's mission, vision and values were considered, as well as the organizational culture and particular practices. At UPAEP, the person is at the center of all its activities. The institution is committed to their employees' wellbeing. Rules and regulations were considered along with the Institutional Development Plan. The groups were asked to determine the way in which their dream would be directly related to the institutional goals, specifically related to social responsibility and family responsibility. The Organizational Wellbeing Department has as a main objective that employees are in good physical, mental, emotional and spiritual health, and that they are able to obtain personal and family satisfiers, promoting the sense of belonging to the institution.

In the institutional Visions towards its 50th anniversary, it is clearly stated: "We are a fraternal community, congruent, happy and committed" [...]. "That contributes to transformation of society through congruent proposals oriented towards the common good" (UPAEP, 2019). The steering committee statement also considers these aspects: "We envision our institution as a community of people and for the people, as a meeting space, happy, alive and profound" (UPAEP 2017).

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The fourth stage, **Deliver**, included other ways in which the design process was integrated, and the best practices that were identified. With the collected information, the program was changed completely, even its name. It became the Transform Your Health program. It is now based on individual goals, and each person competes against oneself, creating achievable objectives and reporting the progress every stage of the way.

A digital platform was created for this purpose, and participants register their personal data and goals, and every achievement, course, and activity they take part in. There is a space where members can upload pictures and other evidences. The web page includes information regarding total points, the general place with regards to all participants, and medical evaluation with a three-level scale, represented by red, yellow and green, which stand for not acceptable, regular and good.

Personal data and vital signs include lab results, physical activities, work activities, entertainment, and dental services. The nutritional evaluation includes weight, body mass index, overall body fat percentage, abdominal perimeter and other observations. The physiotherapy evaluation includes work activities, posture and time in each posture, exercise, posture alteration, flexibility, movement, strength and others.

The digital platform also includes a calendar of activities, both physical and recreational, workshops and other, so that members can select what they want according to their schedule. Every activity is controlled and accounted for. There is also a section of health and wellbeing related news.

The goal is to transform the health of all organization members through the development of habits, establishing a culture of health and prevention that will resonate and positively impact the collaborators' work performance through an integral flexible and friendly program.

The program ended up being developed in three distinct stages:

- **Diagnosis:** It included a scientifically proven methodology developed by the medical academia comprising medical evaluation, screening and testing, individual and corporate health profiles, and the 360º health evaluation; communication strategies and risk groups management.
- **Evaluation:** Based on specific items such as sinistrality, productivity, absenteeism, disabilities, morbidity; risk management including health, nutrition, psychological and sporting support.
- **Preventive and Corrective Measures:** Medical support for risk groups; physical activation and active pauses; conferences and short courses on risk prevention; ergonomics.

PROGRAM RULES AND REGULATIONS

Based on the results from the AI, a robust program was developed based on the following rules and regulations:

1. General Aspects

The Organizational Wellbeing Department offers all employees a program based on the individual; it is permanent and it offers annual recognition to acknowledge the members who have been able to transform their life through healthy habits.

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Members are required to register through the employees' website on specific dates that are made public in advance. Different activities are offered, including medical evaluation, health campaigns, workshops, conferences, and physical activities, all of which are offered on campus.

Members who register to the program must pay a very low annual fee, according to their type of working contract:

- Full time $200.00 Mexican pesos (around $12 USD)
- APL: $200.00 Mexican pesos (around $12 USD)
- Professors on an hourly rate: $212.00 Mexican pesos (around 13 USD)
- Security and management personnel: $150.00 Mexican pesos (around 8 USD)

Payments are discounted directly from the payroll in three different installments throughout the year.

With this payment, participants are entitled to a medical scan at the beginning of the program, and another one by the end of the year, every year. The medical scan includes blood samples to identify cholesterol, glucose and triglycerides levels, as well as medical appointments to obtain data that will allow the identification of those who can be recognized as winners of the challenge, based on the improvement on their health (this includes weight loss, exercise, general physical activity, healthy habits). Awards are conferred in September of each year, and recognition is public to increase motivation and interest in the program. Each person establishes his/her own personal challenges: either losing weight, becoming fit, decreasing levels of bad cholesterol and blood sugar, exercise more, reduce or stop smoking, and others.

Participants can also participate in physical activities that are not offered on campus. All they need to do is register them and upload pictures and information about them in their personal profile. Other activities also include cultural events, arts and crafts training, and sports events, both in house and external. Sports offered in house include swimming, track and field, weight lifting, box, dance, cycling, and others.

All the activities included in the program are validated through the Integral Personal Development Plan (IPDP), which is part of the electronic personnel file where all training and development activities in which employees participate are registered and for which they obtain points to increase their salary level. At the beginning of the program each member must sign his agreement with the rules and regulations, and must check the participation list every time he participates in the activities offered in-house.

2. Program Dynamics

The participant earns points according to his participation. Participants increase their points as they take part in different activities related to the program. Registration for the activities is done through the institutional platform. There is an additional section of the platform for external activities in which evidences such as photographs need to be uploaded.

The activities are graded based on the following points (Table 2).

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Table 2 Activity points

Type of activity	Points
Clinical questionnaire and medical scan	100
Work stress test	100
Conferences	5
Workshop	5
Physicial activities	10
External activities	5

Source: (UPAEP, 2018a)

On the web page and the app, participants can verify their overall points at any given time.
Participation in medial scans is mandatory.
The procedure for awards and recognitions is the following:

- The five men and five women with the highest points will receive:
  - 1° Place: $5,000 in electronic money plus a gift.
  - 2° Place: $3,000 in electronic money plus a gift.
  - 3° Place $2500 in electronic money plus a gift.
  - 4° Place: $2000 in electronic money plus a gift.
  - 5° Place $1500 in electronic money plus a gift.

3. Program Operation

Once the information has been uploaded into the system, the privacy statement needs to be signed by all participants. The medical questionnaire needs to be filled. All participants need to attend a first medical consultation for initial diagnosis. By completing these requirements participants are awarded 100 points.

Blood work for cholesterol glucose and triglycerides is performed on the university clinics during a two week period. The medical consultation takes around an hour and a half. Blood tests are reviewed and the participants go through full medial consultation that includes nutrition, physiotherapy and dental evaluation.

Participants are able to register on line to all the physical, cultural, information, social and other activities of their choice throughout the year. Points are awarded for their participation.

PROGRAM EVALUATION

The challenge was integrated by internal and external activities, medical evaluations, hospital memberships, healthy habits and prizes. All the information about the program has been collected on the digital platform and can be accessed by participants through their medical file. In order to participate in conferences and short courses, members register selecting each activity in the platform, and each activity will be validated by assistance.

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Pictures of external activities that are uploaded should show the participant performing moderate or intense activities. The context in which the activity was performed should be visible. The number of kilometers and or calories burned should also be uploaded with a picture.

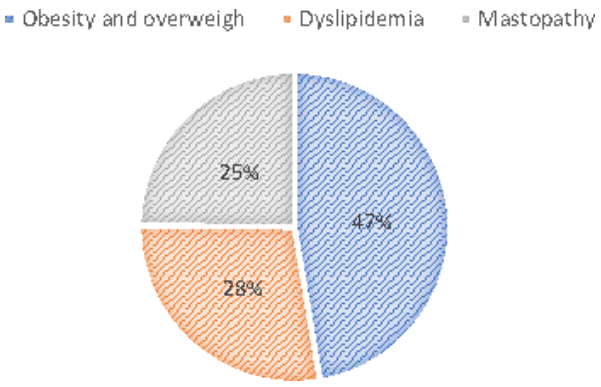
Official apps for the program are Endomondo and Nike +Run Club.

Initial Results From the Checkup

Different studies were conducted to evaluate the success of each program. In 2018

The most prevalent health problems that were detected among employees were:

Figure 1. Main illnesses among participants



As can be observed, obesity and overweight were the prevalent illnesses among the participants.

A pilot test was conducted with 107 collaborators, out of a total of 543 representing almost 20% of all participants. Participation in the pilot test was completely voluntary. They were asked about the activities that they enjoyed the most about the challenge. Participants could choose as many activities as they wanted. The results were the following:

Table 3. Activities that were enjoyed by participants

Activity	Percentage
Relaxing massages	57.9%
Dance	48.6%
Zumba	43.0%
Nutrition courses	42.1%
Food Workshops	38.3%
Talks	38.3%
Insanity	31.8%

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They were also asked about the activities they would rather have for the next challenge
The chosen activities were the following:

Continuous activities:
- Dance classes
- Zumba
- Varicose veins prevention
- Insanity classes
- Just Dance
- Relaxing massages
- Taiichi & Yoga

Programmed activities
- Wine and cheese bio functionality workshop
- Cycling as a family
- Physical activation day
- Hiking
- Eye and visual health
- Courses such as:
  - Learning to interpret food labels
  - Emotions and food
- Informative meetings about the benefits of hospital membership

Coaching activities
- Online course about the 12 dimensions of human beings (follow-up)

Based on these results, the specific objectives of future programs were to offer all participants a medical examination so that they would understand their integral health state, by:

- Promoting balanced weight
- Developing physical activities
- Achieving adequate stress management

In terms of areas involved, the Faculty of Nutrition Sciences provided evaluations of height, weight, body mass index and other. The Medicine faculty was in charge of the interpretation of results. The CUME supported the program with blood pressure tastings. The Psychology faculty measured participants stress. The Department of Sports and Physical education provided the spaces and coaching for sports activities.

Overweight and obesity were the most relevant problems identified. In order to provide help for people who have a high body mass index according to the Mexican Health Ministry, they were invited to have a personalized follow-up for 8 continuous months where they also participated in additional activities such as nutritionist and phycological follow-up and support groups.

This group also receives incentives like a nutritionally balanced breakfast, sports T shirts and sweat-shirts, bascule spa days, tickets for the movies and others. The winner was the person who reached his health goal and maintained his new weight throughout the follow-up. This subprogram offered as prize a trip to any destination within the Mexican Republic.

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Because stress was also a recurrent problem, the program offered different activities including Taiichi and yoga, stress management workshops, massages, and activities to target specific conditions.

The UPAEP has numerous bachelors and postgraduate degrees on health sciences. In March 2018, it inaugurated the Integral Health Center to provide a response to the demands of both students and personnel. This center is part of the social pertinence projects of the university. The center joins numerous clinics, labs and spaces for health and wellbeing in over 4000 square meters that promote interdisciplinary work. The center is based on a University medical clinic that offers medical consultations in general medicine, and specialties such as gynecology, neurology, orthopedics, internal medicine, pediatrics, psychiatry, gastroenterology and others. Other services include labs, medical certificates and medical examinations. It also has a center for psychological, educational and family development, a center for family attentions that provides different types of therapies, a physiotherapy clinic, and a nutrition clinic, among others. As part of the design stage, the members discussed the way in which different university resources can be used for health promotion programs for employees.

LIMITATIONS AND RECOMMENDATIONS

The study had numerous limitations:

- The study was conducted in a single HEI in Puebla Mexico.
- Participation was strictly voluntary; therefore, the group which was studied was limited.
- The Transform Your Health program offered limited services.
- Collected data on other aspects of the program has not yet been made available.

Additional studies should be conducted in other HEIs that have established Appreciative Inquiry to improve employees' health and wellbeing.

At UPAEP, other complementary studies have been planned in order to obtain the perspectives of all participants regarding the way in which Appreciative Inquiry helped improve the Transform your Health program. Once the complete data on the program is made available, different studies can be conducted.

CONCLUSION

As an educational institution, the UPAEP is convinced that a good quality of life is the essence of a successful community. This was the reason behind the creation of the Health Challenge and the Transform your Health programs, created to improve the members health and also to promote a more vibrant and fun working environment. In 2018, a new official norm regarding organizational wellbeing was developed, which will become mandatory. The NOM 035: Psychosocial risk factors in the workplace, is based on the identification, analysis and prevention of different types of risks, creating favorable working environments.

UPAEP strongly believes that a successful business is the result of the people who work in it and its organizational culture. When workers are in a supportive environment, they feel better and are healthier, which leads to lower absenteeism, higher motivation, more productivity, less employee turnover, a more positive image and a consistent social corporate responsibility (UPAEP 2018a).

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Appreciative inquiry shifts the focus from problems to be fixed to celebrations of successes while acknowledging the power of dialogue. It helps forge new approaches to human resource issues that will be accepted by staff and lead to positive change.

The UPAEP is a good example of the benefits that using AI in promoting an organizational health program can bring. It facilitated an improvement in the members' lifestyle and health state; the organizational climate and the sense of belonging, increasing satisfaction and commitment. In the 2018-2019 schoolyear, from a total of 1983 employees, 557 participants were registered in the program.

The analysis of all the medical evaluations is still ongoing, and future research will include theses analysis. Additionally, the university has been applying AI in other areas to improve quality of life at work.

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Section 4
Utilization and Applications

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Chapter 36
People and the Digital Enterprise:
Challenges and Approaches

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ABSTRACT

The transformation of a conventional enterprise from a people-centric model to a technology-centric one has important implications for its human workforce. In this chapter, the authors look at three representative people-related focus areas for the digital enterprise, enhancing workplace wellbeing, enabling continuous learning and compliance to information security. They discuss each of these problems and then look at the technological infrastructure a digital enterprise would require to manage these areas.

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INTRODUCTION

A digital enterprise's core functions are technology driven (Araujo, 2016). Technology lies at the heart of things not at the periphery. While the movement towards this paradigm shift has been going on for a long time with early adopters like Dow Corning beginning this journey as early as 2002 (Rosencrance, 2002), this has been accelerated by recent technological advances such as the Internet of Things, mobile technology and AI. We can collect information continuously from a variety of environments, be informed about a situation wherever we may be and have continuous learning and evolution built into the very fabric of a system. Due to this, earlier boundaries between the organization's external functions such as marketing & sales and the internal such as production have blurred and sometimes disappeared (Cemex, 2019).

Now while a newly hatched startup may begin life from day 1 as a digital enterprise, most existent organizations have to go through a disruptive transformation process as they remake themselves from a people centric to a technology centric enterprise. At the extreme end of the transformation journey organizations may even be trying to go from a model where automation existed to assist people at work to one where the people help create and assist the automation at work (Wired Inc, 2018), (Meister, AI plus human intelligence is the future of work, 2018). That is not all. Part of the digital journey involves connecting the parts of the enterprise separated normally either by function or geography. Curiously this has also led to a phenomenon which Bailey (Bailey & A, 2017) calls workforce fragmentation where conventional models of what forms a 'team' (co-located, functionally similar, all team members are employees of the organization) are challenged and reinvented. Given all this, it is natural that the most profound impact of an organization's transformation into a digital enterprise is on its people, its workforce.

This chapter's focus is on the people, the workforce of the digital enterprise.

If this topic is already vast in scope, its scope could be further broadened by the realisation that while organizations are making the digital journey, people too have been making their own digital journeys. Thus, not only do we have a digital enterprise, we have a digital workforce. A study by Nokia referenced in (Colbert, Yee, & George, 2016) showed that the normal American smartphone user checked their phone upto a 150 times a day. The authors also note in the same paper how increased usage of technology has reduced the ability of people to understand another's points of view, something to be concerned about given that most people in an enterprise work in teams and have to factor in each other's views. All these signal that not only must the workforce adjust to the digital enterprise, the enterprise too must adjust to the digital workforce.

But while this two way adjustment of enterprise to people and vice versa is a fascinating topic, we decided that rather than cover every people aspect of a digital enterprise, leading to a shallow treatment of an important subject, we would restrict our focus to three topics that we expect will be important representative focus areas in a digital enterprise. These topics are not new and are prevalent too in non-digital enterprises. However, each of these acquires an increased gravitas in a digital enterprise and furthermore, the digital enterprise paradigm facilitates the creation of technological systems to address these problems in new and powerful ways. The three topics are, enhancing workforce well-being, creating a continually learning workforce and ensuring workforce compliance to organizational norms. Underlying all three is how enterprises manage change though we do not discuss separately but cover it in the context of each of the three sub-areas. We also touch upon a topic of increased importance, both within the organization and without, that of data privacy.

The rest of this chapter is divided into two sections.

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Section 1 discusses and details three scenarios which represent some of the people related challenges in a digital enterprise.

Section 2 discusses how a digital enterprise would engage with people and behavioural issues of the sort discussed in Section 1. We present an integrated and multi-disciplinary architecture of methods, tools and techniques to study, analysis, understand behaviour as well as design and deliver interventions. We show how these can tackle the scenarios discussed in the previous sections as well as resultant challenges that remain to be solved. Since the technological movements discussed in this section are very current, we briefly discuss the potential evolution of these solutions in the concluding section.

WORKPLACE WELLBEING

Wellbeing is increasingly viewed as a critical aspect of how well we function, as individuals and as members of social groupings. Wellbeing is an umbrella term that covers a wide spectrum of conditions ranging from the extremely negative to negative, for example, psychotic illnesses, substance abuse, self-harm, burnout, anxiety, depression, etc., to the more positive experiences of gratitude, hope, optimism, resilience, contentment, flow, etc. (Dodge, Daly, Huyton, & Sanders, 2012) Wellbeing research has spanned several decades of research from domains as varied as psychology, sociology, economics, on the one hand to business and management, clinical medicine, public health and epidemiology on the other. These scientific disciplines have sought to unravel the experience of low and high wellbeing, at the physiological, contextual or environmental and psychological conditions.

In parallel, there is growing evidence showing how lack of wellbeing can have individual, business, economic as well as large scale social ramifications. The costs of negative wellbeing and the need to foster positive wellbeing have been recognized by enterprise management worldwide. A recent Deloitte report (Deloitte, 2018) indicates that over 50% of CXO survey respondents listed wellbeing as being "highly valuable" or "valuable".

A report (World Economic Forum, 2011) recently estimated the global economic burden of mental illness between 2011 and 2030 at $16.3 trillion. In the UK, recent evidence (Health and Safety Executive, 2018) has indicated that 1.4 million working people suffer from a work related illness with stress, depression and anxiety accounting for 44% of the total work-related illnesses. In India, 3 out of 4 mental wellbeing problems are due to workplace depression with 46% suffering some form of workplace stress (Bhattacharyya & Vijayaraghavan, 2016). The World Health Organization estimates that in India, the age-adjusted suicide rate per 100,000 population is 21.1 (World Health Organization, 2019). In addition, the same report suggests that the economic loss due to mental health conditions between 2012-2030, is estimated to be around 1.03 trillion of 2010 dollars. A recent study specifically around stress at work estimates that the largest excess healthcare costs were due to high job demands with a total of $46 billion, work-family conflict costs at $24 billion, long work hours at $13 billion and low job control at $11 billion (Denning, 2018).

Across the world, the challenges of wellbeing measurement and management have been termed wicked problems. A recent paper highlights the core dilemmas of wellbeing management at the policy level: reliability of measurement of wellbeing, responsibility of promoting wellbeing and trust in wellbeing data management (Bache, Reardon, & Anand, 2016). Thus in the measurement, intervention and management of wellbeing a multipronged, multidisciplinary approach is required.

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Shift to Employee Experience and Integrated Learning Focus

As per Qualtrics (Qualtrics, 2019), only 62% of workers in the US are engaged at work, while the numbers for other countries are even worse, 48% in the UK, 56% in Australia, and Hong Kong – the lowest scoring country with just 42%. Forbes reports that $11 Billion is lost annually due to employee turnover (Forbes, 2013). Enterprises are now realizing such poor engagement may be related to what can be called the employee experience. The better the experience, better the engagement and better the performance. The experience gathering may even precede an employee's entry into the organization and begin from the moment a prospective employee decides to apply to an organization. This aspect covers a wide territory from employee engagement to role fitment to seamless and even pleasurable transition to different roles within organizations.

As technology based forces reshape the workplace, often the only certainty that exists is that the nature of the work done by people in the enterprise is changing and evolving. People have to be constantly on new learning curves as new technological systems and processes arrive. Old job roles are vanishing but new roles are coming into being (Meister, 2018). As many commentators have indicated, your co-worker tomorrow may not be a person but a bot or AI based system (Wired Inc, 2018). How enterprises enable their workforce to both buy into change and how they deliver learning to their employees will be key aspects of the Digital Enterprise.

Enhancing Information Security in Organizations

With the rise of digital enterprises, a significant challenge that organizations face is on the cybersecurity front. The fundamental tensions that arise between the business's need to digitize and cybersecurity's responsibility to protect the organization, its employees and its customers, within existing cyber operating models and practices is invariably noted in many studies and reports (Kaplan, Richter, & Ware, 2019). A significant trend witnessed is that organizations now own a shrinking percentage of the number of devices employees use to connect to corporate assets. Second, organizations control a diminishing percentage of the platforms that house the most critical information assets. The result of these two trends is that corporate IT security policies must shift from controlling how people utilize hard physical assets like computers and networks, to how employees interact with soft organizational assets such as data (Wittkop, 2017). This will also now mean that users have to become more responsible in information use, which requirements are generally laid out in information security policies in organizations

However, a key challenge here is that individuals generally tend to see the convenience or a sense of benefit that may trigger a compromise with information security, rather than think of potential harm from such a compromise. Apathy, ignorance, negligence, lack of awareness, mischievousness and resistance to information organisational policies are the roots of information security incidents in many cases (Safa, Solms, & Furnel, 2016). As per Alex Blau at the Harvard Business Review, (Blau, 2017) while it is not uncommon to think of cybersecurity as primarily a technological challenge, it is really more of a human one, in that most cyberattacks take advantage of human error.

Different forms of threat to information security have made businesses vulnerable to risks, consequently resulting in considerable damage in terms of reputation and money. For example, lost business was the biggest contributor to data breach costs. The average cost of lost business for organizations due to data breaches in a 2019 study was $1.42 million, and it found that breaches caused abnormal customer turnover of 3.9 percent in 2019. While malicious breaches were most common, inadvertent breaches

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from human error and system glitches were still the root cause for nearly half (49 percent) of the data breaches studied in the report (Ponemon Institute, IBM, 2019). Major security breakdowns have occurred because individuals misplace trust, organizations create perverse incentives, or adversaries discover and exploit design flaws. Increasingly, the approach to dealing with these security challenges which is getting attention is by integrating the social, behavioral and decision sciences with technology based approaches (National Academies of Sciences, 2017).

Thus, an important people related challenge that we focus on is the aspect of compliance to information security requirements by employees in an organization. Within this space, we specifically focus on the problem of insider threat in organizations, defined as the potential for an individual who has or had authorized access to an organization's assets to use that access, either maliciously or unintentionally, to act in a way that could negatively affect the organization (CERT National Insider Threat Center, 2018). Insider threat via a company's own employees (and contractors and vendors) is one of the largest unresolved issues in cybersecurity. It is present in 50% of breaches reported in a recent study (McKinsey, 2018). Organizations are certainly aware of the problem but have not been able to devise successful strategies to overcome them, by and large owing to the nature of the problem in itself which is considered a wicked problem.

SCENARIOS FROM THE DIGITAL ENTERPRISE

In this section we discuss the three problems discussed above in more detail.

Employee Wellbeing

With regard to wellbeing challenges in the workplace, research has highlighted how individual, team and organizational factors act as barriers as well as enablers to specific aspects of wellbeing, and in turn affect key individual and organizational outcomes. Some of the phenomena associated with workplace wellbeing include stress and burnout (Maslach, Schaufeli, & Leiter, 2001), person-job fit (Park, Monnot, Jacob, & Wagner, 2011), worklife balance (Kinman & Jones, 2008), presenteeism (Hemp, 2004), anxiety and depression in the workplace (Haslam, Atkinson, Brown, & Haslam, 2005), etc. These have been shown to have significant adverse impact on not only individual engagement and performance at work (Renee Baptiste, 2008) but also that of business outcomes of revenue and profitability (Huppert & Cooper, 2014).

We now discuss some of the specific forms of low wellbeing of interest to workplace or organizational wellbeing. One big focus area in the workplace wellbeing research is that of exploring workplace stress and productivity. Research has indicated how stress at work affects not only workplace engagement, productivity, absenteeism and other work-related outcomes but can also have adverse impacts on individual physical and mental health status. A range of factors have been associated with stress, ranging from job insecurity, balancing work and family demands and other personal and organizational factors. Workplace stress manifests itself in several ways ranging from anger episodes, verbal abuse even physical violence to other physical symptoms like sleeping difficulties, vision problems, neck and hand pain and an increase in sick leaves for the employee (The American Institute of Stress, n.d.).

In the digital enterprise context the proliferation of collaboration technologies has facilitated a distributed workforce and given rise to the emergence of virtual teams. The digital workplace has on one

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hand, led to a greater intersection of disciplinary and business boundaries, while on the other, has also led to its own set of challenges and opportunities, which merit deeper research (Riemer & Schellhammer, 2018) . In parallel, the rise of the digital enterprise has led to several challenges associated with wellbeing, most significantly the blurring of work and home boundaries, digital addiction or overload, lower work-life balance, lower attention and lower overall wellbeing (Barrett, 2019). To counter these challenges, there has been recent evidence suggesting the need for digitally enabled organizations and digital leadership to help improve employee wellbeing (Zeike, Bradbury, Lindert, & Pfaf, 2019).

Specific Challenges in Employee Wellbeing: Burnout

Burnout is described as a psychological syndrome involving emotional exhaustion, depersonalization, and a diminished sense of personal accomplishment that occurs in challenging situations (Maslach, 1982). While originally studied in the context of human service occupations, that is, occupations such as emergency medical personnel, fire fighters, physicians etc, burnout as a phenomenon has been now studied for several other contexts such as academia and organizations as well. In the US, medical professionals across the career spectrum, ranging from students and physicians in training to practicing physicians are at significant risk of burnout with the prevalence of burnout exceeding 50% (Rothenberger, 2017). According to some estimates, the physical and psychological costs of burnout result in approximately $125-190 billion annually in healthcare costs (Kraft, 2018) in the US while the cost to US employers is around $150-300 billion annually (Garton E., 2017) . In a 2016 study of HR leaders, 95% of respondents said burnout is influencing workforce retention (Azahar, 2017). Top factors associated with burnout include unfair compensation, unreasonable workload, too much overtime or after-hours work. Employee burnout has therefore emerged as one of the top challenges that HR and business leaders in most organizations must address to improve overall retention and employee engagement. A range of interventions such as improving work-life balance, improved compensation and rewards, better training and development, etc., among others have been suggested as ways in which employee burnout can be addressed in organizations today (CSP, 2018). In the digital enterprise context as mentioned above, the detrimental effects of multitasking, task switching and the ‘always-on’ culture has been shown to lead to poor time management practices and overloading of the most capable employees leading to employee burnout (Garton E., 2017).

The symptoms of burnout span the physical, psychological and the behavioral dimensions. On the physiological side, burnout is associated with chronic fatigue, lowered immunity, back pain, muscle ache, change in appetite, disturbed sleeping, dizziness and palpitations, etc. Among the psychological dimensions associated with burnout, evidence suggests symptoms such as irritability, inability to relax, feelings of helplessness, loss of motivation, pessimism, decreased satisfaction and sense of accomplishment. These factors lead to specific behaviors such as withdrawal from key responsibilities, delay, absenteeism, social and emotional isolation (Bianchi, Schonfeld, & Laurent, 2018) .

Specific Challenges in Employee Wellbeing: Workplace Depression

Among the growing areas of concern within the workplace is the phenomenon of workplace depression. In the US alone, workplace depression costs over $51 billion in absenteeism and lost productivity and $26 billion in direct treatment costs. It is especially challenging since depression tends to impact people in their prime working age and could potentially last a lifetime if left untreated (Mental Health America,

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2019). Symptoms of depression include persistent sad, anxious or "empty" moods, sleep related problems, appetite and weight fluctuations, loss of interest in activities, restlessness, irritability, persistent physical symptoms, concentration problems, fatigue, guilt and thoughts of suicide or death. Its prevalence in the workplace is compounded by the fact that people often do not seek help due to fears that it might influence their job, resulting in job loss and related adverse consequences. Other concerns associated with workplace depression being unaddressed range from lack of awareness of depression as a manageable illness and stigma associated with depression as well as with other mental health conditions such as stress and anxiety (Mental Health America, 2019).

The areas above are a representative description of a wider landscape of research and practitioner challenges in the organizational behavior, HR and management landscape spanning a diversity of topics, methodological approaches and outcomes of interest. Taken together these insights highlight not only the prevalence of wellbeing challenges in the organizational context, but also suggest the need for a greater understanding of these challenges from a business standpoint with the ultimate goal of not only prevention of adverse events for the individual but also promotion of positive mental health outcomes for the employee at work.

The main challenges in managing mental health in the enterprise context range from issues such as stigma, lack of awareness of the importance of mental health as well as low awareness of the resources available for mental health. If detected early, many of the mental health issues at the workplace, whether they manifest as stress, anxiety, depression or burnout can be managed by therapy and / or medication. Early identification of these issues is therefore critical for preventive interventions and management. Another key facet of mental health issues in the workplace are that while symptoms can emerge over time, they can be also be triggered by specific events at work and/or life in general. These might impact both the physical as well as the mental health of the individual; and therefore while the symptoms of low or fluctuating mood or cognition occur, these are often coupled by other physiological symptoms such as fatigue, sleeplessness, loss of appetite, etc., or contextual demands of high work pressure, job complexity, personal issues, etc. Therefore, the need for individual as well as contextual or environmental sensing is needed for preventive strategies for mental health and their management.. These issues are also reflective of wellbeing measurement and management as wicked problems, in that wellbeing in organizations is multidimensional, difficult to measure using a single approach, has issues related to privacy, trust and data ownership. Each of these issues are to be negotiated by a set of approaches that are inherently human-centered but also scalable to reach a wider population facing a growing set of wellbeing related challenges.

The above challenges call for a technology-driven, well rounded approach to longitudinally measuring and enhancing mental health in the workplace, grounded in the context of the organization itself as well as anchored in the individual's own past experiences in the workplace and other contextual events. Another need is that of evidence from past research and practice to suggest the prevalence of mental health conditions as well as evidence of suitable measurement and interventions in mental health and wellbeing. Further, the individual's right to privacy and confidentiality is another key challenge in enabling better adoption to mental health services in the workplace. Reach and scalability of mental health solutions are other priority areas for workplace stress, depression and anxiety. Given the low prevalence of skilled doctors and therapists worldwide, the need for a technology-based approach becomes even more acute.

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Associate Learning and Integrated Learning Environment

Emerging Expectations of Enterprises and Associates

With the emergence of what commentators are calling Industry 4.0, today's enterprises are embracing advanced digitalization, bringing smart connected systems, products, and services into the forefront of their customer offerings (Deloitte Insights, 2018) (PWC, 2016). This has resulted in enterprises looking both to hire a workforce who are in tune with these technological advancements as well as the means to train the existing workforce to accept, welcome and leverage these changes so as to bring new products and services to the market by leveraging disruptive innovative technologies. A new-age enterprise expects its associates to be agile in their behavior, be proactive in learning and collaborative activities, embrace calculated risks and harness the power of new-age technologies both for personal growth as well as locate develop new business opportunities for the enterprise (Tata Consultancy Services Limited, 2019). Now the mantra for new age associates is to be an agile and proactive learner on a continual basis. Associates, today, have easy access to information through the internet and social media. They are also well connected with their counterparts across the globe. Having said that, associates prefer enterprises that help them to maintain their personal interests and wellbeing while choosing the destination of work.

The paradigm shift of enterprises towards various versions of Industry 4.0 also compels existing working population to adapt and become capable and competitive given changing job demands and the job market. This requires them to be continually updated with the knowledge and experience of the latest technologies and global practices, and avail mentorship and decision making support for both professional work and personal wellbeing. An enterprise that facilitates career growth, that transparently provides role clarity, enables effective communication between leaders, associates, and clients, and provides recognition is always desirable by an associate. Associates are no more interested in transactional roles or jobs but looking for fulfilling rich experiences, which add meaning to their lives and heft to their resumes. In an arena filled with tough competition, these individual rich experiences are the differentiators. Work culture and how associates are treated by various stakeholders help build their experiences.

Associate Onboarding and Integration Challenges

Every large enterprise takes on board a constant stream of new associates joining its ranks either due to a need to bring vital new skills and experience in growth areas or as replacements to existent skilled associates. Each new associate brings distinct aspirations, prior experience, skills, expectations, life situation, culture as compared to other associates. However most enterprises tend to roll out a single non-individualised induction and integration service that is ruthlessly applied to all. This generic service often fails to understand and accommodate the problems, aspirations and needs of the large pool of associates who happen to be from various domains, expertise, experience and roles. Furthermore, one generic integration service often does not embrace the cultural and geographical diversity of its associate pool, which reflects back negatively on the associate's acculturation with the enterprise.

Enterprises have a daunting task of being desirable to digital native, new generation candidates, as well as be innovative to its competition. This requires the enterprise to innovate and enforce massive changes to its training and learning platforms, talent acquisition and resource management services, and offer a seamless journey experience to its associates. Some of the most prominent factors and dimensions for associate integration as shown in **Error! Reference source not found.** are organizational clarity (Lyons,

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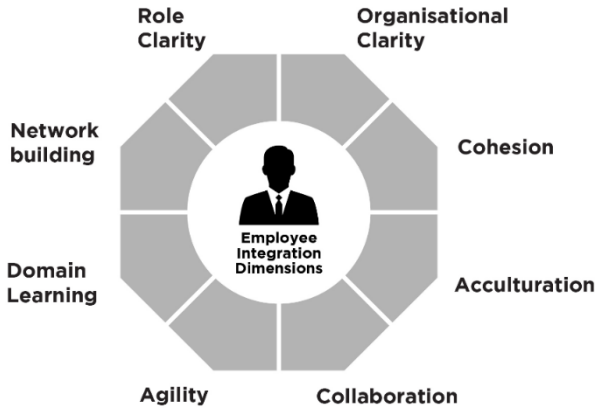
1971), cohesion (Chin, Salisbury, Pearson, & Stollak, 1999), acculturation, collaboration, and domain learning (Anderson, 2001). A large enterprise usually has multiple channels, stakeholders and access procedures to offer services to the associate so as to facilitate domain learning activities, acculturation and build organizational and role clarity. Hence, it is important that these services are coherently interlinked and provide an associate a seamless integration journey.

Figure 1. Dimensions of associate integration



The journey of associate learning starts from the point they join the organization till they leave the organization. Learning is an essential part of getting an associate ready for a project or workspace requiring specific skills. However, associates are often required to move from that project or workspace to other projects requiring differing skills spanning other technology domains. It is essential therefore for an associate to continually update their learning with regard to competency in the newer domains where they have to operate as well as competency in interpersonal skills such as being able to communicate efficiently with teams and clients. However, allocating dedicated work-days for learning activities is often a large cost to the company with a loss in project time. To mitigate this, the enterprise needs to offer the associate opportunities, channels, time, and behavioural nudges for regular self-learning activity which an associate can undertake along with day-to-day work. This will not just reduce the time of an associate to be project ready but also facilitate the enterprise to leverage on individual competencies for building creative, innovative solutions. *Figure 1* shows some of the associate integration aspects need to look at while designing the interventions. The challenge within a digital enterprise is how this can be done using a variety of digital means.

Associate Experience Scenarios

It is being observed that the current associate onboarding and integration mainly focusses on information dissemination. Most times information is provided from the enterprise's perspective without considering the actual needs of individual associates. During a user research study we conducted, it was observed that associates are looking for fulfilling experiences, which are meaningful to them. Associate experiences are formed from all the interactions that one has with the enterprise they are employed in. This often becomes the main criteria of how one perceives their value in the enterprise, clarity of their role,

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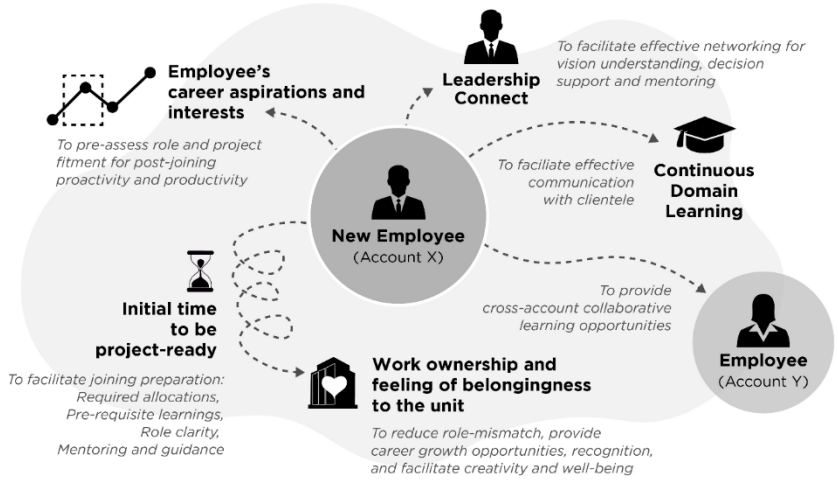
and their relationship with the employer. By understanding associate goals, challenges, and perceptions, designing a positive associate experience is critical to building long-term relationships with associates and reduce attrition (Dukes, 2019). A good associate experience often etches a strong value perception in the minds of its associates, begetting work ownership, job loyalty, and proactivity towards business innovation and development. It is imperative to say that a good associate experience often reflects directly on the company culture and experiences of the clients and customers in their interactions with the company. Today the role of HR has evolved from maintenance and mitigation of compliance issues to facilitate the creation of an ecosystem that is associate centric (Branson, 2018). HR is now looked upon as a partner in the associate's career development and not as a mere transactional help provider.

Figure 2. Associate integration aspects



In this era, digital technology is playing a crucial role in facilitating and inducing behaviour change as well as making employees ready to face tomorrow's challenges. Design thinking and service design methodologies also serve as a foundation for enterprises to conceive effective and experiential solutions to complex problems in the organizational sector. Training enterprise functions towards developing a holistic view of problems and engaging in systemic design of services will generate low rate of service failures, efficient recovery mechanisms and integrated use of advanced technologies to be constantly and appropriately informed. Thus, a well-designed continual learning environment both for the new employees as well as the existing employees who support enterprise functions is imperative for enterprises to generate higher revenue and share a symbiotic relationship with all the stakeholders in the ecosystem.

Compliance to Information Security

Enterprise Information Security: Problems and Challenges

Detrimental security-related behaviors have been identified in the information security literature from different perspectives. Researchers (Guo, Yuan, Archer, & Connelly, 2011) have consolidated the un-

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desirable behaviors to include computer abuse (e.g. Data theft, unauthorized use), IS misuse (e.g. Use unlicensed software, access confidential information), security contravention (e.g. Software piracy, steal information, crack passwords), unethical use (e.g. Illegal software copying, hacking competitors' systems), IS security policy violation (e.g. Copy sensitive data to USB drives, disabling security configurations, revealing confidential information to outsiders), and security omissive behaviors (e.g. Not changing passwords, not back up, not update security patches. Although a security policy of organization may specify what end users should (or should not) do with organizational IS assets, and spell out the consequences of policy violations, this does not necessarily guarantee security because end users may not always act as prescribed (Turel, Xu, & Guo, 2017).

In aiming at building a resilient workforce that is conscious of a cyber-secure culture, it has been realized that the organization's culture is critical, and its culture must emphasize, reinforce, and drive behavior toward security (Lim, Shanton, Sean, & Atif, 2009) (Chris, n.d.). Building a cultural ecosystem to meet the above requirements will mean creating a judicious blend of various elements of technology, processes, and people to create and communicate policies, inform behaviors as well as design and deploy interventions aimed at desirable and sustainable behavior change.

Specifically in building these tools to measure and mitigate problems of insider threat, there are a number of challenges that remain to be addressed, given the wicked nature of problem as mentioned earlier. The problem intent of detecting insider threat is specifically difficult in terms of arriving at measures that explain antecedents of violation related behaviors. Another significant challenge in this space is that, use of these tools also entails extreme care to assure that individuals' civil or privacy rights are not violated. Thus, solutions developed ought to balance security promotion and privacy preservation at the same time. Apart from technical challenges of continuous unobtrusive measurements, there is also the challenge of communicating the purpose of data collection given the GDPR laws.

Specific Problems in Information Security

Specifically, when it comes to dealing with insider threat two important classes of problems are encountered. One is the prevalence of Non Malicious Security Violations (NMSV), which is defined as a violation which is intentional in nature, is a self-benefiting activity without malicious intent, involves voluntary rule breaking and has the possibility of causing damage or security risk (Guo, Yuan, Archer, & Connelly, 2011). An example of a security violation that is non malicious in nature is a case where employees transfer official content over personal mails or might be using pen drives to transfer data from laptops. The other is a violation that is malicious in nature, where an insider (current to former employee) has intentionally exceeded or intentionally used that access in a manner that negatively affected the confidentiality, integrity, availability, or physical well-being of the organization's information, information systems, or workforce (CERT National Insider Threat Center, 2018).

Information security research has looked at a number of end user security behaviors, presenting empirical evidence on the various behavioral influences that lead to compliant or non-compliant behaviors. Certain reasons as to why violations occur are attributed to factors such as perceived non-traceability of a violation (Chatterjee, Sarker, & Valacich, 2015) or to situations where there are goal conflicts – where it is found that performance goals always take precedence over compliance requirements, and thus violations can take place to address a performance goal (Peter, Nina, Ronja, Melanie, & Vogt, 2017). Biases are also found to play a role, which affect the way we think and act. For example, a bias can influence individuals to perceive benefits of violation more rather than the consequences of it, or can lead indi-

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viduals to engage in excessive risk taking (Kahneman, Lovallo, & Sibony, 2011). Similarly there could also be malicious motives leading to more planned methods to commit a violation for personal benefits (Myyry, Siponen, Pahnila, Vartiainen, & Vance, 2009). On the other hand, aspects such as intrinsic motivation and moral standards that people set for themselves (Pahnila, Siponen, & Mahmood, 2007), Organizational Citizenship Behaviors, (which concerns a person's voluntary commitment to act on the organization's interest) (Ifinedo, 2015) and work group norms i.e. how information security practices are perceived to be followed in work groups (Bulgurcu, Cavusoglu, & Benbasat, 2010), (Guo, Yuan, Archer, & Connelly, 2011) are known to increase compliance in IS context.

Past studies (Beautement, Angela, & Mike, 2009), (Bulgurcu, Cavusoglu, & Benbasat, 2010), (Cram, Jeffrey, & D'Arcy, 2017) also suggest that the key factors in the compliance decision are the actual and anticipated cost and benefits of compliance to the individual employee, and perceived cost and benefits to the organization. Perceived costs of compliance include increased physical load, increased cognitive load, time consumed to meet requirements, missed opportunities and a perceived hassle factor. Perceived benefits of compliance include avoiding the consequences of a security breach and protection from sanctions. External factors that influence compliance include design, awareness, training, and education, the culture of the organization, monitoring and sanctions.

Understanding Information Security Behaviors

If information security violations were to be decoded from a behavioral standpoint, they can be attributed broadly to the following reasons:

- **Inadvertence:** Negligent behavior of employees due to lack of awareness, cognitive limitations including biases and mental models
- **Inability:** Lack of ability to comply due to reasons such as lack of self-efficacy, task ambiguity, or time pressure although there may be awareness and intent to comply
- **Intentional:** Non-compliance with malicious intentions of creating harm to individuals / organizations.

We can also see that information security threats can emanate from different classes of employees - a newly joined employee who is unaware of risks due to violations, or from a careless employee although experienced, or an employee who violate norms for a self -benefit without a malicious intent, or a privileged insider who has access to valuable information and can have a malicious intention for violation of norms. It would be interesting to find patterns in such violations among employee categories in the organizational context to map appropriate interventions, however such research evidence is currently sparse. Different sources of threats would need different detection mechanisms ranging from monitoring to using advanced analytics such as UEBA (User Entity Behavior Analytics) to advanced insider intelligence methods (Litan, 2018)

From a psychological standpoint, workplace disgruntlement and employee dissatisfaction are identified as two key underlying causes of deviance in the workplace and organizational crime (Willison & Warkentin, 2009). When an individual has unsatisfied expectations of the organization, they might be motivated to address the expectations through malicious action against the organization. The findings by (Keeney, et al., 2005) reveal that 85% of the insiders identified in their study experienced grievances

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before carrying out attacks and in 92% of the sabotage cases the grievance was related to employment. Personality traits such as Machiavellianism, excitement-seeking, and Narcissism were found to relate to insider threats and antisocial behaviour (Shaw & Stock, 2011) (E.T, Sticha, Brdiczka, & Shen, 2013)

Organizations are now are taking one further step to identify groups or individuals early in the threat life cycle: predictive insider-persona analytics (McKinsey, 2018). Organizations can identify the markers of these personas and actively monitor these markers for specific personas, rather than looking for divergence from normal. This analysis can identify a group or individual likely to represent a threat well before the event takes place; companies can then take steps to mitigate the threat.

That said another stream of literature looks at the role of positive incentives with regard to mitigation of insider threat. Instead of solely focusing on making sure employees do not misbehave, positive incentives create a work environment where employees are internally driven to contribute to the organization only in positive ways. There is evidence to suggest that positive incentives such as better job engagement, organizational support and connectedness at workplace can deter insider misbehavior in a constructive way from the outset of the employee-organization relationship (Moore, et al., 2016) . In combination with traditional practices, positive incentives offer the possibility of a more balanced and constructive organizational approach to reducing the insider threat with fewer negative consequences.

Thus, focusing on early-stage detection of at-risk behaviors and moreover, a focus on the prevention of employee alienation by fostering positive attitudes about the organization and the employee's work experience is also seen to add value, for which, necessary interventions that are technology driven are needed and discussed in the sections below.

TECHNOLOGY FOR THE PEOPLE ENTERPRISE

The digital enterprise from a people perspective would be a seamlessly integrated set of technologies that puts people in better control of their lives. A necessary change of perspective is that we need to see technology as a vehicle for people, rather than, for a business or an enterprise. The technologies should serve people by engaging them, providing desirable experiences, helping them work and play together while remaining well aligned to the business goals. This would serve to address the challenges articulated within wellbeing and norm compliance sections as being wicked problems. These problems are inherently unsolvable, however these need constant interventions that will help keep them under check. This necessitates creation of technologies and platforms that cater to different aspects of the problem. Towards this objective, we present the core elements of process and technology components to enable this to happen. To aid a better understanding of the technologies and their role in the enterprise, we classify them into three classes, viz. engage, sense and intervene. A discussion on these classes and the relationship between them follows.

The Engage-Sense-Intervene Cycle

The scenarios discussed in the previous sections have something in common, which is that, a certain behaviour change is expected of people. Whether it is associates wanting to improve their own wellbeing, or someone who is adjusting to a role change or a security officer seeking to improve compliance to policies, all require people to exhibit behaviour change.

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Every behaviour change process requires a sense and intervene mechanism. The "sense" mechanism, as the names implies, senses or understands the current state of the behaviour. The "intervene" mechanism is expected to recommend an action that causes the behaviour to change to the target or desired state. It is evident that in order for the "sense" mechanism to get access to the individual and for the "intervene" mechanism to get delivered, it would be necessary to have systems that "engage" the people through the behaviour change process. This forms the third core element of the behaviour change process. The "engage" layer is essentially the front end of the digital enterprise. People interact with this layer.

Figure 3. The engage-sense-intervene cycle

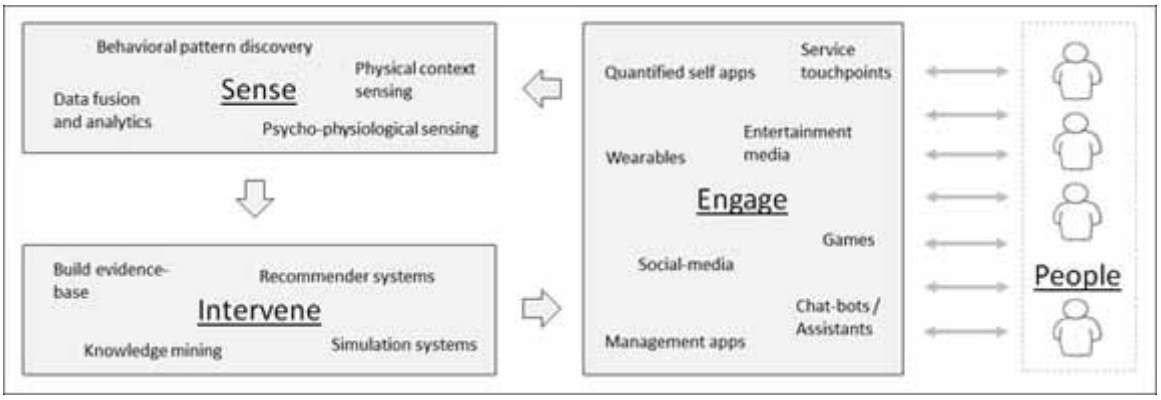

*Figure **3***, is a visual depiction of the three elements. The items mentioned in each of the boxes are examples of the kind of technologies and designs that are being applied to solve problems in each area. We dwell upon the promises, state of the art and open challenges in some of these areas, in the following sub-sections.

Technology Enablers for "Engage"

Human Computer Interaction designers and researchers have been continuously working on making these systems engaging and providing an immersive experience. While there exist newer ways of engaging people like augmented reality, virtual reality etc. this space is largely dominated by designers who create designs that connect with people.

Designing systems that are engaging, transparent and can gather meaningful information from people is critical for the success of the digital enterprise. We discuss two powerful designs viz. purposeful games and quantified self apps that are aimed at this very purpose. We also discuss the overarching space of service design and its role in achieving objectives of all stakeholders of the enterprise. This is followed by a discussion on privacy, its impact on user experience and its implications for design and technology.

Purposeful Games

Purposeful games (also called Serious Games) are designed to have an impact on the target audience, which is beyond pure entertainment. Serious games have seen widespread application particularly in

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learning. (Bellotti, Kapralos, Lee, Moreno-Ger, & Berta, 2013). For example, In the Dragon Box Elements game players have to defeat a dragon and save Euclid's island. In order to do this however, they have to learn basic geometry and Euclid's theorems. Since the game part of good serious games have a fun and sticky element, players keep returning to the game and through that process absorb whatever the serious part is trying to teach or instruct or get across. By exploiting multimodal interaction they can also provide immersive environments where advanced users can practice knowledge and skills. While several purposeful games have been developed, further research is necessary to investigate in greater detail the real effectiveness of the various types of purposeful games (Bellotti, Berta, & De Gloria, 2010). How would stakeholders know what play-learners have done in the game environment, and if the actions performance brings about learning? Could they be playing the game for fun, really learning with evidence of performance improvement, or simply gaming the system, i.e., finding loopholes to fake that they are making progress? (Loh, Sheng, & Ifenthaler, 2015) are all questions that need further user research. Another category of purposeful games are those used for behavioral data collection. In-game behavior may provide indicators of real world behaviors and mental states of players. In-game behavior has been of great interest and has given rise to a community and sub area of serious game analytics. (Loh, Sheng, & Ifenthaler, 2015)

Quantified Self Apps (aka Personal Informatics)

Quantified Self (QS) or Personal Informatics or Personal Analytics refer to the systems as well as the practice of self-tracking. The prevalence of low cost monitoring sensors accelerated the rise of the Quantified Self movement (Quantified Self, n.d.) (Choe, Lee, Lee, Pratt, & Kientz, 2014). A personal informatics system helps a user to measure, reflect upon and improve a personal behavior. PI systems use collected data for the individual's own benefit and hence are likely to collect data that is unbiased and of higher quality. Initially started among technology enthusiasts, QS has become a community of people practicing self-monitoring and building self-monitoring technology. A large number of apps for self-tracking of various domains of life, such as, work, finances, moods, physical activity and fitness etc. are available for free on the internet and have empowered people to take charge of their lives. Although the value of self-tracking technologies has been widely acknowledged, researchers have also discovered a long list of barriers toward the adoption of self-tracking technologies. These barriers included lack of time, insufficient motivation, unsuitable visualization and analytics tools, poor skills for analyzing data, and fragmented data scattered across multiple platforms (Li, Dey, & Forlizzi, 2010) (Choe, Lee, Lee, Pratt, & Kientz, 2014). Specific areas for future research include exploring ways to provide early feedback, to support designing rigorous self-experimentation, to leverage the benefits of—while easing the burden of—manual tracking, and to promote self-reflection. Once a motivated tracker meets a well-designed self-tracking tool, exciting possibilities will arise for gaining insights for health, wellness, and other aspects of life. (Choe, Lee, Lee, Pratt, & Kientz, 2014)

Service Touch Point Design for Enhanced User Experience

We need to design for experiences that reach people through different touch-points and where these points are human as well as technology, and which happen over time (Live Work Studio, 2013) Newer interfaces such as surfaces, augmented reality interfaces, smart devices not only provide immersive experiences but coupled with artificial intelligence based analytics allows us to deliver services with a

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personalized experience to employees. An example of how these technologies might transform learning is the newer breed of micro-learning platforms that are being developed. These not only make learning easy to consume but also makes it engaging and fun. For example, mLevel is a micro-learning and gamification solution that aims to boost corporate training efforts and offer employees a gamified, engaging and rewarding way of training (MLEVEL, 2019). This is in stark contrast with the traditional classroom model where the end user experience was not so much in focus. Artificial Intelligence technologies are enabling the creation of bots, assistants and self-service apps that eliminate the need for support staff and empower employees to get the help they need just-in-time and feel fully in charge of their life. An example of such a bot is Cara, a HR assistant that can answer queries about any policy in a leading IT organization. It is backed by an AI conversational agent platform that uses AI and NLP technologies (Tata Consultancy Services, 2016). Such a bot not only reduces the load on HR staff, but also improves the employee experience by providing them information in real-time. While using digital technology extensively, the human in the loop model is critical to maintain the human touch to provide a meaningful and fulfilling experience. Technology access points to collect and disseminate the information along with the personalized multi-channel interventions can play a crucial role in integrating the employees in the organizations (Kulkarni & Rajamani, 2017)It my however be an error to look at service experience as the only end goal. Behaviour change varies from micro in nature such as influencing buying behaviour to large-scale social changes like lifestyle changes. It is evident that usually there are many stakeholders involved in any situation and therefore the question arises as to whose preferences are to be addressed for design intervention. (Mahamuni, Khambete, & Mokashi-Punekar, 2019) have represented this as 'empathy square' (Figure 4) that combines the important dimensions such as perspectives from the service user, society and environment, human touchpoints such as service staff and service organization like governments or businesses. The empathy square comes handy to scrutinize the service designs from the perspective of four prime stakeholders. It also forms the basis of a Behaviour Progression Framework being developed by them.

Data Privacy

In the context of digitizing of an enterprise, a key concern of the engagement layer is that of data privacy. To create an engaging experience, the system needs to gather enough data about the individual so that a personalized experience may be delivered, however such a data collection might compromise the privacy of the user or the security of the user's personal data. Regulations such as the General Data Protection Regulation (GDPR) provide guidelines on building systems that safe guard the user's inherent right to control personal information, however these also add design elements to the system that affect the user experience. For example, users having to go through difficult to understand consent forms, not once but time and time again. Given the criticality of privacy in the digital era, there has been a drive towards the value-sensitive approach of "Privacy by design". (Langheinrich, 2001) develops six principles for guiding system design, based on a set of fair information practices common in most privacy legislation in use today: notice, choice and consent, proximity and locality, anonymity and pseudonymity, security, and access and recourse. Privacy by design calls for privacy to be taken into account throughout the whole engineering process. Apart from designing for user experience, privacy enhancing technologies (PETs) help engineer systems for privacy. PETs include encryption tools, data masking and obfuscation techniques, anonymizers, consent management systems, tools for enforcement of data handling conditions and infrastructure to allow users to inspect, correct or delete all their data.

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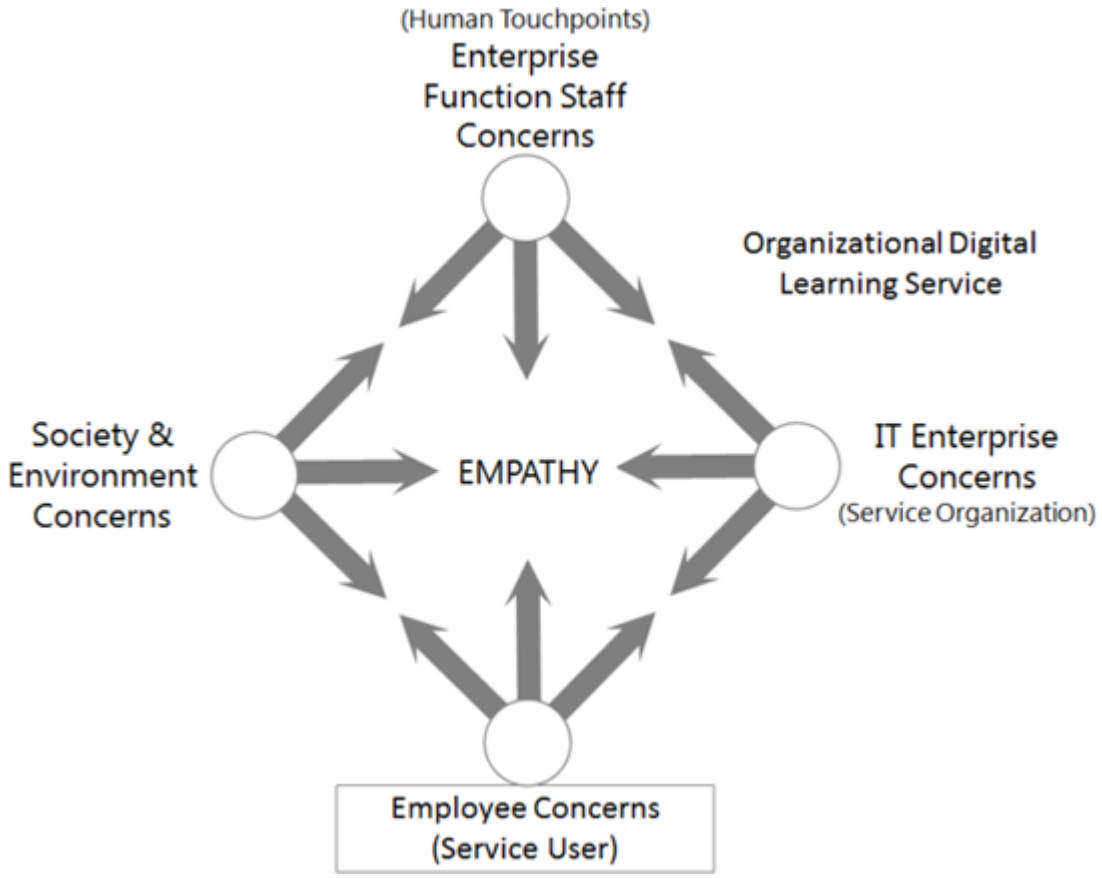
Figure 4. Empathy square (Mahamuni, Khambete, & Mokashi-Punekar, 2019)



Technology Enablers for "SENSE"

The "Sensing" element comprises of the whole process of capturing data, analyzing and interpreting it. This involves the very basic act of measuring the phenomena using sensors, to performing analytics on the data to attaching meaning to it. Data science techniques such as fusion of data from multiple sources, pattern discovery, data analytics are all necessities of this space. Artificial Intelligence (AI) techniques, such as machine/deep learning are used to develop algorithms that can learn and detect various human factors from sensor observations. AI techniques also help discover patterns in data and build predictive models for forecasting/intervention. In this section, we describe how psycho-physiological sensing and physical context discovery enable us to gain richer insights into human behavior.

Psychophysiological Sensing

New developments in the signal processing, physiological sensing and machine learning technologies have enabled the measurement of a wide range of behaviors. Wearables and mobile devices are now capable of measuring physical activity, sleep patterns, heart rates with a fair degree of accuracy. Newer techniques are being developed that will help measure a variety of factors such as stress, fatigue,

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cognitive load and so on. Traditionally self-reports have been used to measure subjective experiences. These involve participant introspection and self-ratings of internal psychological states or physiological sensations, and have the possibility of participants misunderstanding a scale or incorrect recall of the experience. Physiological responses also can be measured via instruments that read bodily events such as heart rate change, electrodermal activity (EDA), muscle tension, and cardiac output. Brain waves (electroencephalography, EEG), fMRI (functional magnetic resonance imaging) provide immense possibility to measure and understand brain activity. Electrodermal activity (skin conductance response or galvanic skin response) has been shown to accurately assess arousal and consequently stress levels. Cardiovascular measures (heart rate, HR; beats per minute, BPM; heart rate variability, HRV; vasomotor activity) also hold potential for measurement of affective states. Changes in pupil diameter with thought and emotion (pupillometry), eye movements have been used to measure phenomena such as attention. (Cacioppo, Tassinary, & Berntson, 2007) These measures are beneficial because they provide accurate and objective data about the mind and body. A survey on psycho-physiological analysis and measurement methods (Baig & Kavakli, 2019), presents a detailed list of studies that use these kind of measures. The survey concludes that the classification accuracy of >90% has been achieved in classifying emotions with EEG signals. A strong correlation between self-reported data, HCI experience, and psychophysiological data has been observed in a wide range of domains including games, human-robot interaction, mobile interaction, and simulations. The downsides, however, are that any physical activity or motion can alter responses, and basal levels of arousal and responsiveness can differ among individuals and even between situations. Many of these sensors are contact based, which means that they have electrodes connected to the body of the subject. This makes the measurement very inconvenient and prone to errors caused by movement. Further, sensor signals could easily be contaminated with uncertain noises or interferences and responses to these signals could also be different for different persons. In such cases, when analyzing sensor measurements, multiple sensors could provide more robust and reliable decisions. In recent years, sensor data fusion is becoming an emerging technology and researchers are applying new methods and techniques to introduce sensor fusion in various domains. (Begum, Barua, & & Ahmed). *Table 1* is a summary of some interesting phenomena that sensors are able to measure.

Table 1. Use of sensors for behavioral measurement

#	Sensor Name	Measures	Behaviours / States
1	Accelerometer	Movement	Physical activity, fitness behaviour, sleep patterns
2	Photoplethysmography (PPG)	Heart rate, breathing patterns	Stress, anxiety, palpitations, fluid retention
3	Galvanic skin response (GSR sensor)	Electro dermal activity	Stress, Restlessness, anxiety
4	Microphone	Speech/Voice	Emotional Valence, Stress,
5	Eye tracker	Pupil movement	Concentration, attention, emotion, cognitive load
6	Electrencephalogram (EEG)	Brain activity	Cognitive load,
7	Camera	Image/Video	Emotion, Activity,

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Physical Context Sensing

While psycho-physiological sensing measures aspects of the individual, the context is to do with the situation, circumstances, environment, location the individual is situated in. The ubiquity of computing devices owing to use of mobiles, IOT have enabled a wide variety of contextual factors to be measured. Important sensors used are GPS (for location and speed), light and vision (to detect objects and activities), microphones (for information about noise, activities, and talking), accelerometers and gyroscopes (for movement, device orientation, and vibration), magnetic field sensors (as a compass to determine orientation), proximity and touch sensing (to detect explicit and implicit user interaction), sensors for temperature and humidity (to assess the environment), and air pressure/barometric pressure. (Nielsen, 2013). Fusion of data from multiple sensors holds the possibility of generating new contextual information. For example, an accelerometer in the user mobile may detect the movement caused by a travelling vehicle, while the GPS may provide information on location and speed. Together with the daily activity patterns detected from the devices used by the individual, we would be able to find out if the individual is on his daily commute to work. Authors of (Servia-Rodríguez, et al., 2017) presented an Android app that used physical and software sensors in smartphones to automatically and accurately identify routines. They measured location traces using GPS, amplitude/noise levels using microphone, social activity using messages and phone calls, and survey to measure psychological variables. They demonstrate the strong correlation between these routines and users' personality, well-being perception, and other psychological variables. They were able to use passive mobile sensing to predict users' mood with an accuracy of about 70%. While the promises of physical sensing are immense, there exist some issues with continuous context sensing — in particular that the energy required to sense continuously is high enough that the user notices. This problem becomes particularly difficult when multiple sensing tasks, such as activity recognition and indoor location, need to run concurrently. In this situation, it becomes hard to optimise the energy consumption of the sensing as the benefits gained in one task could be overridden by the higher rate sensing (for accuracy reasons) of another task. (Balan, Lee, Wee, & Misra, 2014)

Detection of Non-Compliance Threats

In cybersecurity domain, current methods and security tools available to help cybersecurity professionals detect and analyze insider attacks include Intrusion Detection and Prevention (IDS/IPS) Log Management and Security Information and Event Management (SIEM) tools. UEBA solutions look at patterns of human behavior, and then apply algorithms and statistical analysis to detect meaningful anomalies from those patterns—anomalies that indicate potential threats (Sandle, 2018). Approaches to detect insider threats also could look at data mining non-security related data in employee records, from enterprise social networks, or from fraud detection networks. That is, data obtained from violations of policy in one area of employment could relate to a propensity to commit violations in information security (Crossler, Johnston, Lowry, & Hud, 2013). Research in this domain categorizes the behaviors related to insider threats into four major classes: biometric behaviors, cyber behaviors, communication behaviors, and psychosocial behaviors (Ko, Divakaran, Liau, & Thing, 2017). A classification of detection mechanism is given below:

It may be noted that each behavior class is further composed of several behavior types and the authors allude to the fact that insider threat detection is not a single research field, but a conglomeration of disjoint ones.

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Table 2. Classification of detection mechanisms, Source: (Ko, Divakaran, Liau, & Thing, 2017)

Behavior class	Detected threat
Biometric behavior Cyber: Mouse & keyboard strokes, User Interface interaction, File search Physical traits: Eye-colour, Face recognition, Thumbprint, Gaze	Masquerading
Communication behavior: Email, Messaging, Telephone, File-sharing / transfers	Collusion
Psycho-social behavior: Friendliness, Attitude against authority, Social media behavior	Sabotage
Cyber behavior: Printing, Web-browsing, Device usage, Login behavior, File access, Download/Upload activities	Information theft

Another lens that can be used to understand an insider's pathway is guided by the substantial body of research in counterproductive work behaviors (CWB) – employee behavior that goes against the legitimate interests of the workplace. Literature in this space points to the fact that the stress that results from negative life events on the job and in personal lives can lead, if unmitigated, to problematic behaviors in the workplace. Some of the emotional states that can be antecedents to CWB include the following: anger aggression, negative mood in general, emotional exhaustion and stress (Moore, et al., 2016). There can be many external events or internal perceptions of such events that can provoke general CWB as a response. Examples of triggers also include the large bodies of literature on job satisfaction, frustration, and perceived stress as predictors of counterproductive behaviors (Marcus & Heinz, 2004) .

While CWB is observed as a predictable phenomenon through analysis of the aforesaid factors, this also suggests that it may be worthwhile to establish an "early warning system" based on a behavioral approach to insider threat with goals of improving early warning of vulnerability (Intelligence and National Security Alliance, 2017). Negative emotions create psychological, physical, and behavioral strains that can result in counterproductive work behaviors and ultimately a major insider act. Sensing of sustained negative emotions among employees in workplace and correlating the same with other metrics such as performance record, incident records etc. can help understand and profile potential insider threats. This entails not only defining behavioral models, but also seeking methodologies and tools that can assist in swift, continuous identification and assessment of risk from insider threat.

The 2017 INSA report also highlights three relevant tools to assess whether an individual may be moving toward a malicious act to include personality mapping, life-event detection, and emotion detection (Intelligence and National Security Alliance, 2017). Employers are seen to recognize the importance of leveraging innovative technology and data sources to monitor and evaluate individuals on a continuous basis towards this. However, it is also to be mentioned that such ongoing scrutiny does not substitute effective personnel security and counterintelligence processes; rather, it provides employers the opportunity to enhance their ability to detect and divert insiders on the critical pathway to dangerous acts.

Technology Enablers for "Intervene"

The most important component in this category is an intervention knowledge-base. Knowledge about interventions exists in a dispersed form in research publications. The infrastructure that enables the digitization of this knowledge and the recommender systems that deliver the interventions to matching profiles together make the intervention delivery possible. Relying on research evidence in one way to decide an

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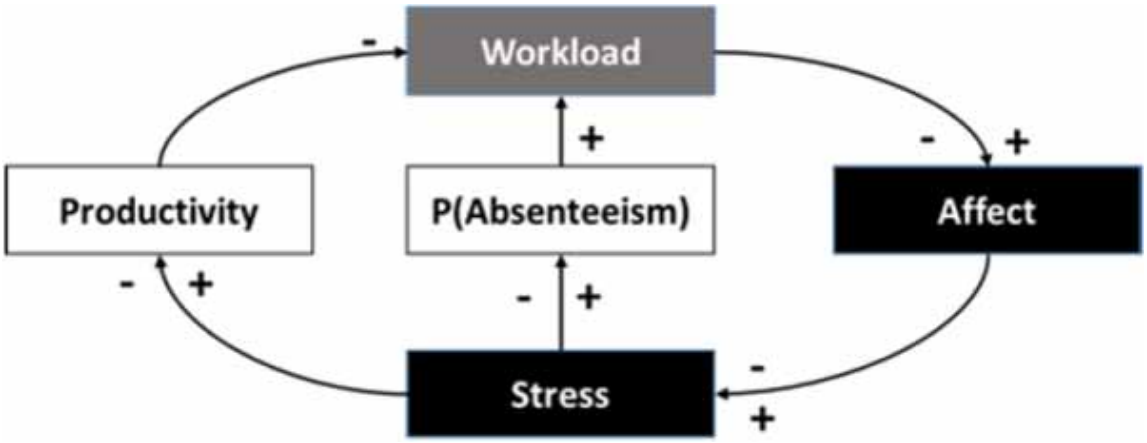
intervention. The other way is to create computational models of people and simulate the effects of an intervention on computational agents. A discussion of these two intervention design approaches follows:

Fine Grained Behavior Modelling and Simulation

Simulation models help us get a sense of the dynamics of an environment, understand both current state as well as implications of changes, whether it be change in an environment or change in the behaviour of individuals. Simulation techniques such as agent based simulation (ABS) have been exensively used, to model the behaviour of human populations at varying scales. However, most of these models have trivial agent behaviour involving just a few behaviour rules and are used either by social scientists trying to understand social phenomena such as the formation of ghettos (Schelling, 1969), norm formation or collapse (Axelrod & Hamilton, 1981) or for policy formulation of various kinds (Hidas, 2002), (Nagel K. S., 1997). However these models are unsuited for environments where a multitude of behavioural factors are at play. For example to understand how various forms of stress impact the performance of a work team, we need to be able to factor in personality, positive and negative affect, forms of stress etc as well as the relationship between these factors.

Figure 5. Fine grained behaviour model



This is challenging since these need to be grounded in behavioural science. The category of models in this space are called Fine Grained ABS (FG-ABS) and methods to build such models have to be precise in order that the constructed model can be justified (Duggirala, Malik, Kumar, & Balaraman, 2017) to how supportive team environments impact outcomes. Figure 5 alongside gives a pictorial view of such a model.

Digital Repositories and Knowledge Mining

The need for repositories as sources of information in a domain has been a critical requirement across scientific disciplines. In medicine for example, the Cochrane Collaboration is the preeminent resource

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for key stakeholders in healthcare, patients, doctors, nurses etc., to help them make key decisions in healthcare. Like in the physical, material and medical science domains, repositories pertinent to the behavioral and social sciences are also emerging and gaining wider acceptance by the researchers in the management field. The research evidences in the behavioural sciences remain dispersed in the form of research publications. Natural language processing, text mining, machine learning technologies and crowd sourcing platforms are being used to transform these publications into structured behavioural knowledge that can be used as evidences for designing interventions and composing behavioural models for simulation. While these possibilities exist, mining the literature is still a round-about way to generate the knowledge-base. The move towards open science will be inevitable going forwards. Open science is the movement to make scientific research (including publications, data, physical samples, and software) and its dissemination accessible to all levels of an inquiring society, amateur or professional. (Woelfle, Olliaro, & Todd, 2011) This would mean that open and online platforms would exist for conducting research and the experiment progress, data collected, empirical evidence generated would all be accessible to the society and could benefit from the knowledge.

The Behavior Modelling Platform

While the technology enablers presented above have their own applications in the enterprise, we believe that a definition of how these will work together is necessary. In this section, we present the schematic of a Behavior Modelling platform. Various platforms for behavior change exist and are aligned to different needs of people. For example Life Dojo is a platform for behavior change and is targeted towards improving employee health. (LifeDojo: Behaviour Change Solution, n.d.). LifeDojo engages employees in a journey of motivation, planning and weekly action that is both scientific and engaging. This is expected to achieve meaningful engagement and lasting behavior change. Another platform on similar lines, is the Behaviour Change for Good Initiative of the University of Pennsylvania. (Behaviour Change for Good Initiative, n.d.). They are developing an interactive digital platform to improve daily decisions about health, education, and savings.

At our organization we have developed a behaviour modelling platform that aims at supporting the entire behavior change life cycle as envisaged in the engage-sense-intervene cycle. The figure below is a schematic that shows the key components in the platform.

The platform and its elements have been applied to study problems in a variety of contexts. A description of some of the key components and their applications follows:

Engage: Digital Pet

The digital pet is a wellbeing companion aimed at engaging people over long durations. The long term engagement is achieved through use of Purposeful Games and Personal Informatics mechanisms. Like any other pet, you have to attend to and take care of the pet. It in turn cares for your wellbeing. It can sense key factors of your wellbeing such as your emotions and physical activity using the machine learning classifiers. The sensing measurements are aided by periodic probes that also assess self-reported states experienced by people. As the pet app detects your emotional states, it also nudges you to perform various activities so as to relieve you of the undesirable emotion. For example, it might ask you to go for a walk, while also measuring your step-count and help you increase your wellbeing score. Both, the player and the pet have their own wellbeing scores to be taken care of. If you score well in the game, you would be

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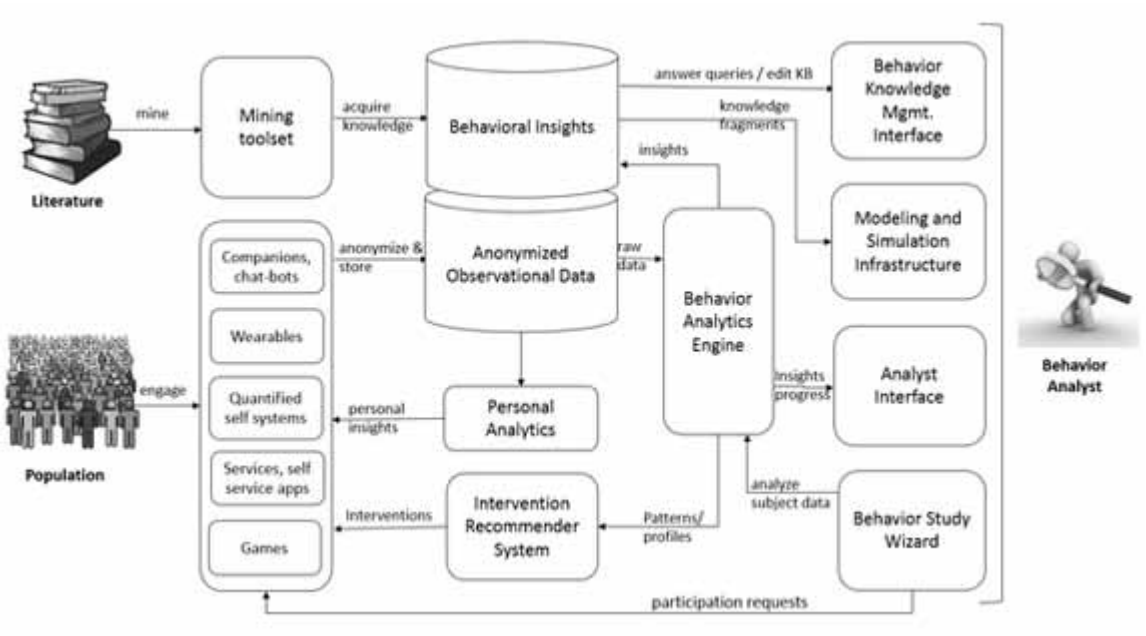
rewarded with a trip to an adventure world, where you can have fun playing different games. We have used the pet to study wellbeing of associates. It has also garnered interest as general purpose engagement system that may measure behaviors of different kinds and deliver interventions to the population.

Figure 6. Platform for behavior modelling



Engage: Desktop Activity Tracker

The desktop activity tracker is a personal monitoring system that tracks user initiated activities performed in the computer. We have used it to study routines of associates in the enterprise. The tracker generates a log of activities performed, which are then classified into various categories of work such as, technical, documentation, communication etc. An analysis of these categories revealed routines that people follow, differences in work patterns of associates in different roles and correlations with key metrics such as associate engagement and productivity. The tool protects privacy of associates by allowing only pattern and correlation level information to be accessed by the study administrators.

Engage: Survey System

The survey app is used to measure various psychological and subjective variables that are difficult to sense using external observations. This tool is a mobile app that has a server component that allows different kinds of surveys to be configured and administered to the associates. We have used the survey app in conjunction with other tools to study a variety of problems such as correlates of absenteeism and productivity in support projects, study of financial behavior in pink collar workers, compliance to information security practices etc.

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Engage: Personal Wellbeing Portal

The portal serves as an aggregator of data collected by all the systems mentioned above. It presents personal dashboards to the user based on the data collected. These dashboards aid self-reflection and improvement. Various workflows that engage the user are also made accessible through this portal. The portal provides a self-assessment module that helps associates screen themselves for various mental health conditions and also get various personality tests over the platform. This helps build a richer profile of associates and is useful for studying problems in all contexts. The GDPR features such as ability to get a copy of all personal data, withdraw from the data collection, delete all data from the system etc. are made accessible through this portal. The platform enables researchers to design and publish field studies and recruit volunteers for research. The volunteering requests also appear on this portal and can be used to incentivize associates to participate in behavioral research.

Sense: Affect and Activity Sensing

The sensing library comprises of machine learning / deep learning classifiers that analyze observations made from microphones (voice), camera (images/videos) and text (spoken or typed). We have built algorithms to detect emotion from all three modalities mentioned above. There are integrated into the digital pet app and helps it recognize emotion. We have achieved accuracies in the range of 78 to 85% using these. Other algorithms we have built include detection of activities from daily journals of associates, classification of those activities into classes that represent various domains of life, detection of the expression of stress and sources of stress in the daily journal. Thee accuracies achieved in these ranges from 72% to 80% and these will improved as we get more real world data. The text analysis algorithms that are currently being used to analyze daily journals are also now being integrated in analyzing conversations with chatbots. Another set of algorithms we have developed help make the digital pet more fun to play with, for example, we have developed an algorithm that detects laughter from the microphone and is used to play a game with the pet, where the player has to laugh for certain period of time and intensity to gain certain points in the game. The voice based emotion detector has also been integrated with the desktop activity tracker to study emotion and its correlates with activity. This will help get richer insights from the studies in the norms compliance space. Another application currently being developed is a qualitative survey analysis tool where long interviews taken in the process of service design are analyzed using these algorithms.

Sense: Pattern Discovery

As the name indicates this module performs analytics on the measured behaviors to discover patterns of interest. We have implemented the capability of discovering sequential and repeating patterns in the behaviors measured by the digital pet. Some examples of these patterns being: persistently negative emotional states, lack of physical activity over a period of time, too much physical activity along with frequent negative emotional states and so on. The patterns comprise of both healthy and unhealthy patterns. We also have pattern discovery algorithms built on the desktop activity tracker data that help understand routines of associates. Currently work is in progress on discovering patterns in wellbeing data that can help predict chronic conditions such as burnout and depression. Such predictive modeling will help early detection of associates tending towards the chronic conditions and help arrest the condi-

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tion in time. Sensing of sustained negative emotions among employees in workplace and correlating the same with other metrics such as performance record, incident records etc. is used to understand potential insider threats. For example, detecting emotional change is critical to understanding the individual's level of stress and can help in identification of an 'at-risk' employee.

Intervene: Knowledge Mining Toolkit

The platform contains a "Behavior Knowledge Base", semi-automatically mined from the behavioural sciences literature. It comprises of behavioral insights mined from the behavioral sciences literature. It also contains evidence for interventions that have been validated in the field. This is a set of software components that enable the creation of the behavioral knowledge base. It comprises of a crawler, a document classifier, section classifier, and NLP routines that mine the target knowledge fragments into the repository. We have mined about 6000 papers from the social sciences literature to build this knowledge base of interventions and behavioral relations.

Intervene: Intervention Recommender

This module is responsible for finding a matching intervention for a give pattern discovered in the data. It leverages the Behavior Knowledge base to choose the intervention. For example, if a user is being sensed to be in a "negative" emotional state for a long period of time, the pattern discovery module would discover this as an unhealthy pattern and would find a matching intervention for such a condition in the repository. If a match is found that intervention would be dispatched to the engagement layer (digital pet or the desktop tracker) and the user would be prompted to perform the suggested action, as recommended in the intervention. If no matching intervention is found, an expert such as a psychologist would be asked to enter an intervention for that condition. This features also has applications that will also potentially help to deliver mitigation strategies before a possible malicious / non-compliant activity can take place thus preempting behavior at the right time.

Intervene: Behavior Simulator

The knowledge repository as well as data collected from the field are used to compose behavioral models which help in understanding dynamics of a situation to predicting future behaviors. The behavior simulator module helps create models of stress and productivity at the workplace and enables a variety of what if analyses around the antecedents of workplace stress, work demands, individual needs etc. and their impact on outcomes of interest (Balaraman, Hayatnagarkar, Singh, & Duggirala, 2016). Such models are useful as a sandbox to test a certain intervention before it is deployed on a large scale.

CONCLUSION

In this chapter, we have attempted to discuss some of the people related challenges of a digital enterprise such as workplace wellbeing, improving associate experience and complying with information security norms as well as the multi-disciplinary set of tools and techniques a digital enterprise can use in addressing these challenges. We also discussed the Behavior Modelling Platform, a computational

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platform to tackle such people related challenges around the Engage-Sense-Intervene model and take the reader through representative components in each of the Engage, Sense and Intervene modules to give the reader a concrete feel for the function and use of the components and how these come together.

The people challenges mentioned in this chapter are of course only representative of the larger space of such challenges within a digital enterprise. Two other examples of such challenges are role fitment or finding the best fit between role and individuals and assisting employees in maintaining work life balance. Each of these challenges require us to engage with them and see how existing approaches can be used or extended to tackle them. Today as the nature of work is being continually reimagined we can imagine that the list of challenges too will change as well. In particular, the increasing capabilities of AI based automation will require digital enterprises to constantly evaluate the balance of work between human and machine. Old roles will perish and new ones come into being. Opportunities and challenges thus will continue to grow and evolve.

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Chapter 37
Institutionalizing Inclusive Markets as a Prerequisite to Inclusive Growth

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ABSTRACT

This article questions the contemporary definitions given to the concept of inclusive growth, which is assumed to be an effective solution to the problems of exclusion (marginalization, unemployment, poverty, inequality, etc.), without designing new growth models and without putting in place the tools necessary for inclusion (regulation, institutions, capacities, etc.). In the authors' view, the current exclusionary model is far from generating real inclusion as long as it fails to promote the necessary institutions to produce real inclusion and the ability to deal with the different forms of "exclusion."

INTRODUCTION

Since the turn of the 1980s, the world has known a return to classical and neoclassical thought, which consider economic liberalism as the most efficient economic system and the market as the single mechanism able to lead to an efficient allocation of scarce economic resources and production factors. Several factors explain the dominance of this line of thinking.

Firstly, we can mention the political changes that led to the ascension of the Republicans to power in the United States (Ronald Reagan in 1981) and the Conservatives in England (Margaret Thatcher in 1979). Keynesian economic thought, which had dominated since 1936, was called into question and judged to be unable to respond to the various economic crises of the 1970s as well as to their unprecedented economic outcomes, one of which was Stagflation.

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Second, the 1982 debt crisis put the public sector (assumed to be relatively less efficient than the private sector) under scrutiny. Social policies were regarded as being unadapted and untargeted as to those who deserved them (the poor and needy).

Third, the fall of the Soviet Union and its Eastern European communist bloc put an end to a 50-year old politico-economic bipolarity. The hegemony of the liberal model and market regulation versus state regulation having emerged since.

Consequently, under the effects of intense and acute socio-economic crises, developing countries have been forced to rethink their development strategies by devising Structural Adjustment Programs (SAPs), which aimed to achieve two main objectives: stabilization and liberalization. In the late 1980s, Africa was undergoing such adjustment programs. However, these SAPs often failed to achieve their expected goals, in particular in those African countries' less developed economies.

Indeed, according to Issaoui (2011), "after 30 years of structural adjustment, African countries reproduce the same dynamics as they did originally and thus reproduce their problems and concerns (social, economic, political, etc.). Poverty, famine, illiteracy, civil wars, diseases, inequalities, and marginalization seem to be their unescapable destiny. Despite the multiplicity of factors explaining such a lack of progress, it seems that the one that best explains underdevelopment is the failure of the adopted development strategies. Implementation of Structural Adjustment Programs (SAPs), despite their relative success in many developing countries, has not enabled most African countries to achieve the expected sustainable development and growth objectives. Still more, in some countries, these programs have directly and indirectly worsened social indicators and reduced welfare distribution. It would thus be legitimate to ask why SAPs have not generated the same success in Africa that they have achieved on other continents. Is this a problem of the inherent inefficiency of SAPs or rather the inadequacy of SAPs to deal with the reality of African countries? Moreover, if SAPs do not meet the needs of Africa then what kind of development is needed for its countries?" (Issaou, 2011)

Generally, in the short term, specific data have shown that SAPs aimed at achieving economic efficiency often result in social losses (downsizing of the public sector, a decline in nominal wages, poverty etc.). However, the social gains of such measures often only appear in the medium and long terms. Welfare degradation resulting from the time lag between the immediate social losses and future economic gains is not always bearable, in particular in countries where the social dimension is already in crisis (as is the case in many African countries). Therefore, a new strategy needs to be thought of to integrate the social actors that have been eliminated by standard SPA structural adjustment strategies.

During the last decade, there has been a virtually unanimous conviction to rethink and revise older development models. In the case of Africa, these models have not achieved their set objectives as the continent is still reproducing its main problems (famine, poverty, inequality, etc.). Behind these problems lies a main major cause, the nature of the growth-oriented standard development model, which tends to exclude most economic actors from value creation. In order to overcome these problems, it is necessary to adopt a new approach that involves the poor, the deprived and the previously excluded population. The new development model should be built on inclusive growth that relies on inclusive markets. The principle is to involve the different economic actors (employees, unemployed, national and multinational companies, government, civil society, institutions, etc.) in the various meshes of added value creation. However, such an approach can only succeed and achieve its objectives if it is institutionalized, meaning that it should be created under the guidance and supervision of an organization that can monitor the implementation of inclusive growth and the mechanisms needed to achieve an inclusive market.

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In real terms, the question is how to succeed in restructuring economic objectives so that the disadvantaged population takes full advantage of growth benefits? Achieving real inclusive growth inevitably requires the development of an economic model that promotes the creation of inclusive markets. However, the transition from exclusion to inclusion can only be done efficiently with legal and organizational instruments that establish an appropriate institutional framework for the creation and promotion of these inclusive markets.

CHALLENGES OF INSTITUTIONALIZING INCLUSIVE MARKETS

Inclusive markets represent the starting point for inclusive growth as an economic instrument that embodies the inclusion of poor populations in the value creation process. When implementing these markets, in particular through their institutionalization, is seen as a prerequisite to achieving inclusive growth, a conceptual problem arises as to the nature of the objective itself (A). Indeed, expounding on the concept of inclusive growth would allow us to point to the need of institutionalizing inclusive markets (B).

A. **Conceptual Problem of Inclusive Growth:** According to the OECD, "Inclusive growth rests on the idea that economic growth is important but not sufficient to generate a sustainable increase in welfare, which implies a fair sharing of growth dividends between individuals and social groups. At the same time, it is increasingly admitted that beyond income and wealth, welfare also depends on non-monetary factors such as health and educational achievement. As a result, level and wide distribution of these non-income factors is fundamental to inclusive growth, which attests to its multidimensional nature. Moreover, to be relevant, inclusive growth should lend itself to concrete initiatives, so that public officials can better understand the trade-offs and complementarities between action domains, and identify the tools to be used to achieve improvements in distributing monetary and non-monetary benefits. Accordingly, it is important to examine the various dimensions of inclusive growth simultaneously and not one by one[1]".

According to the IMF (2013) "Inclusive growth is one that must involve a large part of the country's active population and offers equal opportunities to access markets and resources[2]".

However, these definitions of inclusion lack practical and logical outreach. Indeed, they refer to and reproduce the same liberal thinking that largely dominates the actual economy. According to the above definitions, importance is given to the objectives of inclusion without considering the pragmatic dimension that allows for achieving real inclusion.

International financial institutions continue to define inclusion, on similar lines, to those which led later to exclusion, poverty, and inequality. Similarly, these definitions posit that inclusion can only be done through distributive and redistributive economic policies. This means a return to classical and neoclassical thought, which has tried to resolve social problems through market mechanisms.

While inclusion is formally considered as a new concept, we notice that it is explained and treated as a consequence of the old liberal economic policies. More specifically, it seems that IFIs continue to make the same mistakes: defining a new complex socio-economic concept (like inclusion) by a recourse to classical and neoclassical thought. Thus, according to this liberal and institutional approach, we can assume that inclusion is conceived through reference to old policies. Indeed, since 1929 and even before and more precisely in 1917, with the rise to power of the proletariat dictatorship in the former USSR,

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governments invested in the social sectors, in a pure distributive and redistributive framework. Nevertheless, these social policies have not been adopted in an inclusive way. These policies, themselves, have contributed to worsening poverty and inequality levels in developing countries, in particular when these countries wanted to move towards a market economy (Sen, 1981; Sen, 2001).

A priori, the definitions presented above raise many conceptual problems, in addition to the problems of contemporary growth models. To solve these problems using the same old models seems to be a transcendental idea that essentially comes down to economic metaphysics.

Alternatively, we believe that introducing inclusive markets would provide a remedy for exclusion with all its facets. Exclusion, up to now, coupled with the old growth models deprived the poor population of growth's benefits. They bear witness to the passive involvement of these target populations in the economic process. Inclusion is the fact that state institutions act to include the excluded in the growth process by creating inclusive markets in which they can produce and create added values.

However, it seems that international financial institutions continue to define inclusion with the same logic that has led in the past to exclusion, poverty, and inequality. Indeed, with this static and ideological view of inclusive growth, all socioeconomic problems will be eliminated by involving populations in the inclusive growth process.

At this stage of analysis, it seems to be important to distinguish between two types of inclusion: passive inclusion and active inclusion. Passive inclusion assumes that individuals and populations have a passive role in growth creation. In other words, inclusion is temporary and not durable. Individuals find themselves at the same point of departure; exclusion. On the contrary, active inclusion aims at permanently including and integrating poor populations into the growth process.

With the aim of seeking to counteract the problem of eternal unemployment and to redress the inefficiency of various classical solutions, the marginalized and poor population can benefit from an effective state intervention institutionalizing inclusive markets.

B. **Institutional Problem of Inclusive Markets:** With the findings on African economies, the World Bank (WB) and the International Monetary Fund (IMF) were forced to rethink their development strategies to ensure they are in line with the reality of African countries. Indeed, where poverty is most widespread, it is apparent that inequality is striking and unemployment rates are high. It would be difficult for the different liberal economic policies (introduced and implemented by SAPs) to achieve their economic and social goals (such as growth or sustainable development) as long as most economic actors and agents are excluded from the economic process.

However, in order to implement active inclusion, it would be important, at first, to create, develop, and extend the institutions' basis which bear directly on inclusion (whose objectives are to empower the poor). These institutions should exist to design, regulate and control inclusive markets so that they can effectively involve the poor in creating the expected value chains. However, as we shall see in what follows, no action has been taken towards to this end.

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OPPORTUNITIES (OR MECHANISMS) FOR THE INSTITUTIONALIZATION OF INCLUSIVE MARKETS

As mentioned above, inclusive growth is a self-propelling process that can lead to sustainable development. An important question arises: given the importance and centrality of inclusive growth, have African countries yet developed the institutional context through which such growth can be implemented?

The answer lies in establishing the grounds for the institutionalization of inclusive markets (A). Nevertheless, the concepts of inclusive growth and inclusive markets are recently developed and remain poorly known to the various actors. Therefore, it is essential to put in place effective tools to implement these concepts and to promote inclusive projects at continental and regional levels (B).

However, investment is the main and most rapid framework to identify and promote economic policies. Accordingly, the imminent need to share wealth among poor and rich countries has created a further need to regulate investment flows. The latter need resulted in a clear adjustment of international investment law, which now promotes opportunities for the institutionalization of inclusive markets (C).

A. **Neo-Institutionalism as the Theoretical Basis of Inclusive Markets:** Neo-institutionalism refers, to a large extent, to the theory of ownership rights, which played a strategic role in explaining economic phenomena and in determining the concept of "optimal state". This should be included in the appropriate way, which is through its capacity to choose and distribute ownership rights in the most efficient way, i.e., the way that maximizes wealth. This equivalence relationship between ownership and wealth rests on the idea that individuals are more productive and motivated when they operate within an ownership framework that allows them to reward their efforts. Once the optimum form of ownership is reached, the State should validate it at first and protect it in a second stage.

The analysis of North (1979) offers us a second outlook on the size and the interventionist extent of the State. It admits the existence of two production frontiers, the technical frontier and the structural frontier. The first refers to the state of knowledge and accumulation of productive resources, while the second represents the organizational dimension in which legislation, regulation, distribution of ownership rights are ensured. Interaction between the two borders is both undeniable and certain.

Indeed, according to North, developing the techniques used in social production goes hand in hand with developing new forms of exchange and creating new needs to acquire or to share information. If the State is aware of this change and retains the same structural form adopted previously, externalities and transaction costs emerge and risk moving society away from the optimal production frontier. Therefore, in order to avoid this scenario, the State must intervene as soon as possible in order to better define ownership rights and to determine precisely the basis on what those rights are organized and sanctioned.

North went further in his analysis by asserting that, at a given production frontier, different institutional structures may intervene. Each structure determines a different performance. In other words, institutional organization approximates the technical production frontier as long as it is more efficient and gives rise to more wealth.

This analytical framework may provide an elegant answer to explaining the difficulties of the previously-planned economic structures, which played, later, a catalytic role in their collapse. Indeed, in this bloc of countries, there was a misappropriation in the distribution of ownership rights and social production functions.

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Similarly, ownership rights were misallocated to the extent that they did not create an efficient scale of incentives allowing for increasing productivity and assuring an economy of scale. There was an information gap between the owner and his delegates, which created enormous externalities. Inability of the organizational structures put into place to approximate the productive structure reduced the efficiency of the whole economic system before giving way to a new system that will trigger, in turn, a new organizational structure whose privatization represents one of their main strategies.

North redefines state intervention by assuming that what counts most is not knowing the timing, extent, and manner of its intervention, but rather to know whether the organization being implemented is optimal or not and whether it allows the society to approach or move away from the technical production frontier. In other words, the State should answer the following questions: is the present organization an impoverishing or a rewarding mechanism? If it is impoverishing, a second question should be raised: which optimal organization that should be maintained?

B. **Promotion of Inclusive Projects:** African States expressed their willingness to commit themselves to the ideals of inclusive growth within the framework of the African Union and this on two levels. The first move is to put in place the constitutional norms introducing a common development process and inclusive markets. The aim is to introduce the concept of inclusive growth into the agreements and protocols linking African States and inciting the establishment of Regional inclusive markets like the example of the Pan-African Investment Code initiated by the African Union Commission, which advocates inclusive growth as a key idea in promoting intercontinental and international investment flows.

The second plan calls for setting up institutional dimensions and aims at creating the African Inclusive Market Excellence Center (AIMEC), which would work to achieve a multiplicity of objectives and offer several services. By way of illustration and while not excluding other possibilities, we can cite:

- Collect, disseminate, exchange and produce the necessary information for and on all economic socio-economic actors (including investors and firms, governments, international and regional organizations, donors, small and medium-sized enterprises, civil society, research institutes). This allows for the offering of the necessary information leading to establishment of the inclusion framework within all economic dimensions.
- Training different actors in the different dimensions of inclusive markets (technical, legal, and innovative dimensions),
- Encourage the different actors to invest (or encourage investment) in the establishment of inclusive markets (promote dialogues, catalytic actions etc.),
- Locate the financing sources needed to build inclusive markets accessible to small and medium-sized enterprises, banks of the poor and patients capital,
- Coordination between the different actors for the implementation of inclusive markets.

Although the center favors a positive conclusion on the institutionalization of inclusive markets, this does not prevent us from stressing that the incentives for the various actors to adopt the concept of inclusive growth remain insufficient. Political and legal efforts should be made to provide an enabling environment for inclusive growth, such as democratic reforms, peace and security, health and education

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reforms, which reflect the non-monetary dimensions of inclusive growth and to which all actors (led by governments) should contribute. However, if the efforts deployed by African countries in order to succeed in the new economic model have wider outcomes, this is not the case for Tunisia, for several reasons. The first reason that shows Tunisia's non-alignment with the continent's policies is the neglect of the very concept of inclusive growth or inclusive market in the latest reform of its investment law. This leaves the law in total divergence with the future Pan-African code, which will be the optimum institutional framework for investment. The second reason is the public-private partnership law, which, despite the fact that it provides an appropriate framework for the introduction of the concept of inclusive growth, does not show any willingness to promote the creation of inclusive markets under its public-private partnership framework.

However, the opportunities to regain lost ground are indeed real, in particular through the exploitation of the evolution of the African framework in this area, and by aligning with the evolution of international investment law.

C. **Evolution of International Investment Law:** Investments are usually presented and perceived as beneficial or even necessary to the economic development of any country. This idea bears on the main function inherent to investment, which is the contribution to wealth-creation. Thus, the obvious interest of States in devising and supervising the introduction of investments.

However, countries' attention to investment flows differ depending on their position as capital-rich countries or countries disabled due to capital scarcity. The former type aim at exporting capital to conquer new markets, while the latter type solicit the importation of capital to ensure a transfer of wealth. It is under this perspective that the proliferation of bilateral agreements for the promotion and protection of investment takes place[3].

At first sight, the above-mentioned agreements complement the States' efforts of exporting and importing capital through a transfer of wealth, which is favorable to them. However, conflict of interests between the signatory States is visible in the means used for the successful reception of investments. As the name suggests, these agreements provide legal safeguards that host States offer to investors. Protection of foreign investment is thus conceived as the main lever of incentives for wealth transfer[4]. This amounts to considering that investment flow is conditioned by the protection of investments, which represents the counterpart of the imminent capital requirement for investment-hosting countries.

Although investment protection is strongly requested and is a natural consequence of investors' dislocation outside their territories, it should in no case be exorbitant. Importing investment by poor countries is not an end in itself but rather a tool to achieve the goal of economic development. The added value of investing in State-run economies will be suppressed by agreements which burden the State alone and the unilateral rights which benefit investors.

Investment protection agreements are concluded with the aim of protecting the respective investors of the signatory States. In other words, through the agreement, each State theoretically benefits from the obligations imposed on the other contracting State. However, in practice, only investors who are nationals of the State- exporting capital benefit from these agreements. Added to this is the scarcity of capital for capital-importing States and the absence or almost absence of investment to export and to protect. Hence, there might be a dysfunction of the mutual benefits principle in practice, inherent to the nature and content of most investment protection agreements.

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A new generation of investment protection treaties has emerged since 2004, in which the scope of the legal relationship between the State and the investor is broadened by introducing new clauses recognizing certain rights to the host states "Including their right to preserve the public interest in certain sensitive areas such as health and environment"[5].

The recognition of such rights for the benefit of the host Member States is a significant initiative. In other words, the recognition of investors' passive commitment to their hosts not to hamper their policies on certain areas is cost-effective. Such a move requires internal regulation representing the first step towards recognizing the possibility of committing investors to active obligations. It amounts to empowering investment and raising awareness about the relevant economic and sustainable development issues of States, under a new spirit of partnership and efficient complementarity[6].

Partnership means, on the one hand, that the investor benefits from the incentives and the protection rules of their investment, and on the other hand, the State exploits the possibilities of investors' active contribution to economic development. Accordingly, inclusive markets are an appropriate instrument to deploy investors' abilities in terms of capital and know-how in order to develop the capacity of the poor and the marginalized population and optimize the added value of foreign investment.

This new win-win line of thinking about the relationship between the State and the investor is clearly expressed by the drafters of the Pan-African Investment Code (PIC). The latter code is still the model par excellence of integrating the notion of inclusive growth into multilateral conventions, not only on the continental level but also on the international level and this by widening the scope of the PIC project to include the so-called "third States"[7].

The first specificity of the PIC lies in changing the origin of investment rule. African states now draft their own rules governing the flows of African and other cross-border investment, instead of adopting the investment model pre-drafted by capital-exporting States.

The second specificity, which obviously follows from the first, is the creation of a balance between the rights and obligations of investors. The notion of inclusive growth is therefore introduced as part of investors' obligation to promote productive employment and inclusion.

Therefore, as early as the PIC, African states declared themselves to be: "Aware that development takes place through employment and that the expansion of productive and decent employment is the means by which economies grow and diversify and that an adequate supply of jobs is the foundation of increasing prosperity, inclusion and social cohesion; a factor of economic development. ". Similarly, the PIC project puts into effect the integration of the notion of inclusive growth by stipulating that all investors should contribute to the development of infrastructures, services and production capacities[8]. Inclusion is also expressed by inviting member states to encourage employers to invest in workforce training and capacity-building, in particular youth, women and disadvantaged groups[9].

CONCLUSION

The aim of this paper is to show the important role of institutions in any approach to achieve successful inclusive markets. However, despite this importance, Africa has not yet been able to build real institutions able to promote inclusive markets, which risks falling behind the objectives it has set itself.

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It would be important to note that the investment law adopted in Tunisia did not refer to the notion of inclusiveness either implicitly or explicitly, although the underlining base inherent in the said law is supposed to promote incentives and target useful investments. This law could have been an opportunity, par excellence, for Tunisia to formalize and institutionalize the concept.

Indeed, one can deduce the absence of a political will to achieve the active inclusion of the poor and disadvantaged social groups and this by acting on improving their abilities. The law reproduces the old investment incentives without considering inclusive projects to be projects with a national interest and which the State should normally consider as a priority, worthy of incentives and financial benefits. Thus, this missed opportunity has prevented Tunisia from being able to align itself with the new and ambitious African investment policy (enacted by the Pan-African Investment Code draft).

Therefore, as long as the concept remains excluded and not recognized by the laws and regulations of Tunisia and by most African countries, the problems resulting from exclusionary growth can only be repeated indefinitely.

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ENDNOTES

1 OECD report for an inclusive growth, meeting of OECD council for ministers, Paris, 6-7 May 2014.

2 IMF African Department — from higher growth to inclusive growth, Michael Atingi-Ego Conférence des parties prenantes du Burkina Faso Ouagadougou, 7 mai 2013.

3 African countries have put in place most of their bilateral investment treaties (BIT) by the mid-1980s and at the beginning of 2000s.

4 States look for developing domestic investment through incentives. However, the investment protection issue as it is conceived by legal instruments is exclusively raised when foreign investors are concerned.

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[5] New models were adopted by the US in 2004 and then in 2012 and Canada in 2004. Then came other BIT models of other States inspired by the American and Canadian models.

[6] As an example, we cite international investment law instruments: the AMI consolidated project; the draft agreement on investment for sustainable development designed by the international institute of sustainable development, the main OECD directives to multinational firms, etc.

[7] Article 1 of PIC project specifies the extent of PIC implementation.

[8] Article 3 of PIC project.

[9] Article 39 of PIC project relative to human resources development.

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Chapter 38
Who Will Take Care of Me?
The Future of Human Resources in Anaesthesiology, Critical Care, and Emergency Medicine in Europe.

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ABSTRACT

Foreseeing the needs and availability of anaesthesiologists across Europe is a challenging task. This is influenced by different factors that include the composition of the workforce and the organization and structure of health services in every country. Some trends call for attention, such as changes in work patterns brought about by an ageing specialist population, the increasing numbers of women in anaesthesia, or cultural and societal shifts towards work-life balance. Anaesthesiology is a challenging specialty with an expanding scope of practice, requiring highly motivated professionals, frequent long work hours, and addressing stressful situations often. To ensure quality anaesthesia provision, the wellbeing of this diverse population of anaesthesiologists should be addressed. Achieving rational and flexible work hours, adequate compensation, and promotion of a workplace culture that fosters safety, motivation to learn, and equal opportunities for leadership or academia positions are challenges to be addressed to make sure that excellence in patient care is maintained.

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INTRODUCTION

Foreseeing in advance the needs and availability of anaesthesiologists across Europe is a challenging task. It is a very complex issue influenced by different factors including the composition of the workforce and the different organizations and structures of health services in every country. Some trends call for attention, such as changes in work patterns brought about by an ageing specialist population, the increasing numbers of women working in anaesthesia, or cultural and societal shifts towards work-life balance.

Anaesthesiology is a challenging specialty with an expanding scope of practice, requiring highly motivated professionals, frequent long working hours including nights, and very often addressing sudden stressful situations. To ensure high quality anaesthesia care, the wellbeing of this diverse population of anaesthesiologists should also be addressed. Achieving rational and flexible work hours, adequate compensation, and promotion of a workplace culture that fosters safety, motivation to learn and equal opportunities for (also flexible) leadership or academic positions are key challenges that should be tackled if we want to make sure that excellence in patient care is maintained (De Hert, 2018).

Current Situation in Anaesthesia, Critical Care, and Emergency Medicine

Anaesthesia departments across Europe are facing a higher workload due to their involvement in many hospital areas, which are growing or expanding their scope of practice. Anaesthesiologists are asked to provide round the clock services ensuring quality and safety in critical care, operating theatres, pain clinics, emergency patient care (both in and out of hospital) and palliative care.

The question is, as the population in Europe gets older, demand for specialized healthcare services is expected to keep growing. The burden of disease grows at an estimated 10% per year (Benziger, Roth, & Moran, 2016). Noncommunicable - or chronic - diseases are responsible for more than 60% of deaths on the continent. As average life expectancy in Europe is growing (76.7 years in 2010 to 77.9 years in 2015) (World Health Organization, 2018) so are the health problems associated with age and sedentary lifestyles. Although the obesity rate in Europe is still far from the numbers reported in North America, an increasing number of Europeans are joining the ranks (*Health at a Glance: Europe 2018*, 2018).

One reason for concern is the fact that resources are not growing at the same rate. Socialized health care systems as available in most European countries are closely monitored to optimize spending and efficiency. An estimated 10% of GDP in the EU is directed to healthcare, with countries like Germany, Sweden or France allocating even more than that. Yet, the annual average growth rate in healthcare spending in Europe went from 3.1% in 2005-2009, before the 2008 economic crisis, to 0.7% in the 2010-2015 period (*Health at a Glance: Europe 2018*, 2018). This affects both the material setup and management of the hospital as well as the possibilities to recruit and compensate available workers.

The Demographics of Anaesthesia and Critical Care

Age

A recent review by Giacalone et al (Giacalone, Zaouter, Mion, & Hemmerling, 2016) highlighted the fact that European anaesthesiologists are aging, too. In France, about 50% of the anaesthesiologists working in 2005 will be retired before 2020, and there is no sufficient replacement. The government has suggested an increase in retirement age to 72 years of age to compensate. In the UK it is estimated that

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up to 70% of the actual medical workforce will not retire before they are 68 years old. A similar pattern is observed in Canada and the US, where in 2013 close to 30% of anaesthesiologists were older than 55 years of age, and 8-10% (depending on source of information) were older than 65 years old. Replacement, again, is not guaranteed, let alone covering the growing demands for anaesthesia services (A. D. Baxter, Boet, Reid, & Skidmore, 2014).

Older anaesthesiologists provide great care and bring their extensive experience into the workplace. But they have their needs and concerns, too. Older physicians have a higher rate of burnout, anxiety, and depression. Their job satisfaction in lower than that of younger colleagues (Katz, 2016). On top of that, age related physiologic changes may reduce their physical tolerance to on-call duties, their ability to concentrate or listen in noisy environments, and the speed at which decisions are made (A. D. Baxter et al., 2014; Giacalone et al., 2016). All these skills apply in the daily work of an anaesthesiologist, and all the more so during nights on call. Of course, the aging process can be very different among individuals, and some older doctors may be performing at the same level as younger ones, but a systematic review from the US showed that quality of care tends to diminish with age, as elderly physicians are less likely to follow guidelines or be up to date in medical knowledge (Choudhry, Fletcher, & Soumerai, 2005). Although this had no effect on outcomes (experience probably acted as a counterbalance), it is certainly something to take into account.

As such, this population can therefore have widely variable needs and expectations. Some doctors may keep working because they love their job and feel fit to practice it; others may lack the financial stability to retire. Some may be happy limiting their clinical time in favour of administrative, teaching or research duties. Others may prefer to work less than full time (LTFT) but take only clinical work, or skip being on call entirely. Their continuing education needs may also be different, and it has been suggested that they may benefit especially from crisis management simulation to keep peak performance in the operating theatre and other acute care scenarios (A. D. Baxter et al., 2014; A. Baxter, Thompson, & McCartney, 2016).

All this adds complexity to an already complex situation; namely, managing an anaesthesia department. But in order to provide the best possible care and not waste the best that every physician has to offer, an individualized and flexible approach sounds like the most sensible option. Some departments already have "winding down" plans, including considering stopping "overnight on-call" at 60 years old, no further high acuity cases at 65, or retirement from main operating theatre practice at 70 (A. Baxter et al., 2016).

Women

As in many other areas in medicine, there is a higher number of female than male physicians in Anaesthesia. This was first highlighted by a 2007 study of the Anaesthesia workforce in Europe, which looked at the future considering the increasing presence of women in the field, and the impact of future medical immigration within Europe (Egger Halbeis et al., 2007). In that study, approximately 47% of anaesthesiologists in Europe were women; in trainees, the number ascended to 53%. In 2018, the European Society of Anaesthesia sent a survey to active and affiliate members, showing percentages of 49.5% for male and 50.5% for female anesthesiologists (De Hert & Honorato-Cia, 2018). Not surprisingly, the biggest net increase per age group happened in the younger cohort (Baird, Daugherty, Kumar, & Arifkhanova, 2015). This is interesting considering the future of the specialty. The trend is likely to keep on growing, as female medical students now account for 50-55% in most medical schools (Leslie, Hopf, Houston,

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& O'Sullivan, 2017). The general situation in the developing world is very similar to Europe (Baird et al., 2015; Leslie et al., 2017)

When studying gender differences in anaesthesia and critical care, the focus has been directed at the higher number of women working part-time, and, consequentially, the difference in compensation (Baird et al., 2015; Egger Halbeis et al., 2007; Haller, Delhumeau, Mamie, Zoccatelli, & Clergue, 2016; Miller & Katz, 2018). The 2018 ESA survey showed that, in Europe, substantially more women than men work part-time (29% women vs 12% men). More men than women are thus in the higher income range (5,000–10,000 € and > 10,000 €). It is difficult to ascertain if this can be solely related to the different work pattern. A recent study from Switzerland (Haller et al., 2016) showed that more women were paid with a fixed salary (59.2% vs 46.6%) as compared to men, and that services carrying an extra compensation were more often taken by men (36.9% vs 22.9%) than by women. This reflects the situation in other European countries.

The general assumption is that most women will be the primary caregivers for children, parents or other older relatives. The demands imposed of them by this effort make them more likely to prefer LTFT work, or at least to be able to have a relatively flexible schedule. But women also seem to be more frequently involved in some work areas more than others, dealing with ambulatory or paediatric anaesthesia, or being more active in pain management. There seems to be an implicit understanding that a woman will fare better in less aggressive and physically demanding areas of the specialty, which is notoriously one that deals with emergencies and complex or critical cases requiring many talents and strengths, and that frequently involves long shifts or night work. It is difficult to ascertain whether these preferences are anecdotal or real, and, in that case, if the proportion is really significant. Also, there is a lack of data on what may cause women to gravitate towards those areas: schedule, flexibility, type of patient, type of work environment?

The Swiss study mentioned earlier (Haller et al., 2016) also highlighted another issue that is widely recognized and that has generated a large amount of interest in the past two or three years: the fact that women are majorly underrepresented in academia, leadership and management positions. A 2017 study comparing Australia, New Zealand, Ireland, Canada, the UK and the US, found that female trainees accounted for 40-50% depending on country, but that chairs of department, academic leaders or board members barely reached 20% in average (Leslie et al., 2017). Another 2017, worldwide analysis in Critical Care diversity showed that the representation of women in conferences, guideline recommendation or clinical practice guidelines was also very low (around 13% of 413 guidelines published between 2012 and 2016) (Mehta et al., 2017). In the 2018 ESA survey the disparity was also very apparent, with twice as many men than women in a position of professor and hospital medical director and even 3 times more men in the position of head of the department (De Hert & Honorato-Cia, 2018).

The reasons behind this situation are varied and complex, and may vary slightly within different areas or countries in Europe. They may not be intentional, but they are not random, either. This situation is not exclusive of the medical field, and as a matter of fact has been extensively documented and researched, especially in the business world. There is no doubt as to the capability, competence or expertise of women in their respective fields of knowledge, so there must be other reasons holding them back. Personal preferences aside (any woman -or man- may choose to prioritize family, health, social work or other aspects of their life, or just not be interested in academia or leadership), many reasons have been researched that may explain the disparity. One is cultural bias, when people implicitly assign gender-specific roles such as caring for children in women or expecting a focus in career success for men (Ibarra, Ely, & Kolb, 2013). This is frequently unconscious and includes gender but also race, country

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of origin, or age. Women´s competence appears to be evaluated using different standards than men and takes personality more into account (assertive women as seen as "bossy" while the same attitude in a man would be acceptable and even expected). These biases affect both men and women, with many successful women falling into what is called a "second-generation bias" in which they tend to minimize the effort and hurdles they had to overcome. This happens partly because women tend to expect their efforts to be recognized while men are apparently more forward and make sure that their hard work is visible (Gravett, 2013; Ibarra et al., 2013).

In the past five years, a considerable effort has been made to educate everyone on those biases and to promote and facilitate the access of women to higher positions (De Hert & Honorato-Cia, 2018; Leslie et al., 2017; Mehta et al., 2017; Toledo et al., 2017). Both the ASA (Leslie et al., 2017) and the ESA (De Hert & Honorato-Cia, 2018) have made it public that they are committed to advocate for changes and have taken steps to ensure data transparency, equality in boards and conferences and to promote workplace change through education. These measures will be discussed later, as they affect some of the other issues in this chapter.

Diversity in the Workplace

Diversity is a very broad term. Currently, and in Medicine, who does it refer to? What is the norm that is not being met? A possible approach would be to consider that most European health care systems were originally designed with one type of physician in mind – the most common one at the time. That would be a Caucasian male, head of a family, culturally close to the community he was serving, and available to put in as many hours as needed as family support was guaranteed. From that perspective, aging physicians and women are probably the biggest "diverse" groups we are dealing with right now.

Over the past forty years, European society has changed beyond recognition, and it is safe to say that that kind of physician is not anymore the norm. There is a different approach to work-life balance, women are currently half or more of the medical workforce, and economic pressures are much higher. The way we work in hospitals has also changed, and anesthesiologists are currently seeing how their scope of practice is growing to perioperative medicine, emergency care, pain management and so on. Training and continuing education are more challenging as new technologies emerge and are incorporated into daily work.

While this is challenging enough for just about anyone, doctors from different cultural or religious backgrounds or that trained abroad and returned may face additional pressure. Medical migration in Europe was first addressed in the 2007 survey mentioned before, and at the time it showed that most of the movement was happening from Eastern to Western Europe, with a small number of anesthesiologists coming from the Middle East or Asia. Some countries such as Estonia or the Slovak Republic lost up to 15% and 20% of their anaesthesiologists (Egger Halbeis et al., 2007). Although this trend seems to have slowed down in recent years, there is still a considerable number of physicians working outside their home countries for a variety of reasons. The needs and concerns of these groups might be hard to reach as they may take some time to become fully integrated in medical professional associations.

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IN SUMMARY

Providing the best possible care to our patients requires well trained, highly motivated anaesthesiologists. To ensure this, it is important to look at the composition of the workforce, both now and in the years to come. Their needs have to be addressed to make sure that they can develop their careers in a balanced, integrated way, and that they stay motivated to deliver good care, do research and teach future anaesthesiologists. A good way to make sure of this is to ensure adequate representation and access to leadership positions; it is well known that diversity is associated with better results in the business world, and there is no reason that suggests otherwise in medicine. This seems to be related to the fact that other points of view are taken into account when making managing decisions, and also to the possibility of finding different ways to solve problems.

Most of the work already done has been in the field of gender equality, but the possibilities and mechanisms affect all groups. Before looking at what has already worked and what else can be done, we are going to analyse the impact of other key influences: how technology (and especially communications technology) affects us and how we work; and the increasing problem of burnout and ensuring physician wellbeing.

LIFE ITSELF

If there is a generalization that a vast majority of us will accept, it is this one: the happier you are, the better professional you will be. This should specially ring true for doctors, whose empathy and compassion towards patients will directly affect the quality of their work. But will also affect their motivation for career development, research, learning, and teaching. And ultimately, their decision to stay in medicine or quit, or to retire early. Satisfaction at work is affected by many variables, and is highly personal. It is affected by cultural background and gender, but also by whether you are a baby boomer, a millennial or belong to generation X. A detailed analysis is beyond the scope of this work, but one issue remains critical: whatever can be done to increase wellbeing will ultimately affect the quality of care.

Technology and Connectivity in the Workplace

Connectivity is changing how we work and relate to others and has had a major impact on how doctors deal with their patients, the hospital workflow, and how and what they need to learn in order to stay current and motivated. Surgeries of about 2h can experience an average of 9 interruptions per hour (one every 7 minutes!) of varying importance (Antoniadis, Passauer-Baierl, Baschnegger, & Weigl, 2014). Some are related to time dedicated to enter data into anesthesia information management systems, and a good number of others to the use of the phone, by talking or by texting. This use is not always work related and it is debatable whether work-only use can possibly be demanded. In a 2012 analysis, the ASA Closed Claims database reported 13 adverse outcomes in 5822 claims related to distractions such as reading, phone use, or loud music. There was no report involving social networks or other Internet uses. These events were labelled substandard care and were associated with payments in 80% of the cases. The median payment was $725,937 (Domino & Sessler, 2012). Clearly, patients consider that doctor´s focus is important.

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It´s not a mere question of whether this affects outcomes, although that is a serious concern. It affects the whole way we communicate and the pressures that we experience. It certainly affects psychological energy and focus. And it requires a high standard of professionalism, requiring an effort to minimize anything that distracts from good care, to facilitate the avoidance of alert fatigue, and of course the inappropriate use of social networks (Cammarata & Thomas, 2014). That is today´s world, after all. If you are in Belgium, you look at your phone an average of 34 times/day. In the US, it would be 52. In Norway and Sweden, 61% of people use their phone at work for personal purposes. In France, this number goes up to 92% ("2018 Global mobile consumer trends. Deloitte.," 2018).

How many times each of us, or someone close, has stated that they use their phones too much but don´t actually know how to change that behaviour? Internet addiction was defined more than 20 years ago (in 1996, to be precise). Technology has many benefits and has changed our lives for the better in countless ways, but we have to own it, not the other way around. More than never, each anaesthesia provider now holds the responsibility for how they provide care, and of what they publish in social media. It´s not just about respecting the privacy of patients – there are some cases of doctors who were fired because of racist or highly inappropriate comments about their (anonymous) patients.

To add another layer of pressure to an environment already loaded with them, in many hospitals in Europe texting through chat apps such as WhatsApp™ has become the preferred way of delivering department alerts or requests. This means that a medical professional may receive his/her week schedule, case list, and any changes in them without actually talking to anyone, be it the operating theatre manager, the department chief or whoever is in charge of organizing and distributing work. It´s practical and easy, but many of the nuances of communication are completely lost. Is that anaesthesiologist all right with a sudden change? How did the last case affect this professional emotionally? Face to face communication may not always be the most practical approach, but it should not be cornered that easily. Healthcare professionals, after all, are notorious for minimizing their own pains and aches in favour of patient care.

How Technology is Shaping the Work Environment

Being constantly connected is not the only way in which technology affects the way an anesthesia professional (or any other medical doctor) works. The development of artificial intelligence (AI) and self-learning algorithms is aimed primarily at the automation of tasks that formerly required a human being, like EKG reading or radiologic and ultrasound interpretation. Mobile apps are being developed for diagnosing diabetic retinopathy or melanoma, and are becoming increasingly accurate. All this technology might not be ready yet, but for sure is not going to take long (Chuchu et al., 2018). Some of them are already available for the general public to download and use. Virtually anyone will be able to diagnose skin cancer or atrial fibrillation. Will be eventually stop needing doctors altogether?

In anesthesia, automated closed-loop systems have been under development for quite a while, guiding drug dosage through processed electroencephalograms, with positive results: lower use of drugs, stable anesthesia depth, shorter recovery times (Pasin et al., 2017). Other physiologic variables such as variability in heart rate or stroke volume have also been used to guide fluid therapy or analgesia delivery (De Jonckheere, Jeanne, Keribedj, Delecroix, & Logier., 2018; Joosten et al., 2016). All this does not yet replace a human anaesthesia provider (for the time being, we are still better than machines at rapid danger recognition and at integrating information). The question here is *when?* (probably sooner than we may think) and also *how?* - and here the answer is: *we don´t know yet*. The way we work is going to change, and sooner rather than later. The way anesthesiologists will work in, let´s say, ten or twenty

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years from now, may be very different from what we do now. We will still need human providers but they may have a somewhat different set of skills and knowledge. With robots and AI guiding the more technical aspects of anesthesia delivery and physiologic homeostasis, the role of the anaesthesiologist might very well lean towards team coordination, preanesthesia counselling, and a humane, compassionate approach to surgical and critical care patients and their families.

Does this mean we won´t need as many doctors in a few years? It´s difficult to foresee, but it certainly looks possible. What is clear is that there is something no robot can deliver: the human touch. The understanding, the comforting, the compassion – who wouldn´t want a knowledgeable physician providing this, and coordinating our care, in those moments of critical illness or surgery?

Burned-Out Anaesthesiologists

The problem with human touch is that it implies that the anaesthesiologist is capable of this empathy and compassion. There has been for long now a discussion on why doctors seem to stop less by the bedside nowadays. A 2017 review showed that, in UK anesthesia departments, two thirds of patients' complaints were related to the ethics and professionalism of healthcare workers, and only one third to medical or technical issues (Pieri et al., 2016). What´s going on here? There is not one single reason. Anaesthesia is one of the medical fields at high risk of psychological stress. Anaesthesiologists are exposed daily to heavy workloads, stressful situations with patients and colleagues and many responsibilities. They work nights, weekends and holidays. They miss on social life, and may feel isolated. They don´t always have a solid social or institutional support. On top of this, and as a recent article in *The Lancet* stated, physicians become "disillusioned by the productivity orientation of administrators and absence of affirmation for the values of relationships that sustain their sense of purpose" (Epstein & Privitera, 2016). This affects morale, and, when it all together becomes too much, or the individual doesn´t find a mechanism to deal with it, burnout may ensue.

This syndrome seems to have reached epidemic levels in the medical field with a reported prevalence around 50% in all specialties, and well over it in fields related to emergency or critical care (Sanfilippo et al., 2017). Burnout in anesthesia is known to appear in response to chronic stressors, such as poor temporal structuring of work, conflicting interpersonal relations, or lack of control over the activity itself (De Oliveira, 2017). Burnout syndrome is broadly accepted to have three main components: depersonalization (physicians become cynical and detached), emotional exhaustion (loss of motivation and hope) and low personal accomplishment (they feel ineffective and helpless) (Epstein & Privitera, 2016). Who doesn´t know of someone experiencing this to some extent?

The consequences impact the workplace heavily (impaired job performance, poor display of empathy towards patients, a trend to leave the practice); but especially the person, with reports of poorer health (higher incidence of hypertension, sleep problems or gastric disorders), increased interpersonal and marital conflicts, depression and other mental problems, some leading to substance abuse. It may even lead to suicidal ideation or even attempts to take one´s life (Rama-Maceiras, Jokinen, & Kranke, 2015).

To top this, women consistently report higher levels of burnout. This begins early in their careers, and with early we mean *very* early: six months into residency, female residents have higher levels of stress and burnout than their male counterparts (Guille et al., 2017). We have cited before the many cultural reasons and biological factors that have been advocated to account for this difference. Age, on the contrary, seems to have the opposite effect: older anesthesiologists report lower levels of burnout, as they have probably developed adequate coping mechanisms over time (Wong & Olusanya, 2017).

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A considerable effort has been devoted to identifying both risk and protective factors. Developing resilience and coping mechanisms is useful, as are stress management strategies. Individuals are encouraged to give self-care its due importance, establishing the best possible work life balance achievable, identifying specific stressors and trying to change either the setting or the emotion associated with them (Rama-Maceiras et al., 2015).

However, physician-oriented strategies are overall less effective than organization-oriented interventions like reducing workload, rescheduling shifts or organizing multidisciplinary meetings to enhance teamwork (Panagioti et al., 2018). Promoting a positive climate, group cohesion, communication, and participation are also approaches that institutions can take. Engagement can be promoted, and especially in anesthesia, by giving certain extent of control over work schedules, by promoting flexibility and part time schedules that don´t curtail the physician capability to pursue research or teaching. Other way to increase control is to promote clinical pathways designed by multidisciplinary teams.

All this is going to require quite a cultural change. Big academic hospitals with a never-ending workload – how will they avoid rewarding a faster (but chaotic) pace and promote quality? Smaller institutions – will they have the capability to actively measure climate in the workplace and provide counsellor help when needed? Will they have the resources to provide flexibility in work schedule? And all of them, how to deal with the stigma associated with psychological distress? Not to say when things go even further and substance abuse becomes the coping mechanism selected. Anesthesia is notorious for having a risk of addiction 2.7 times higher than other specialties. Opioids addictions (mostly fentanyl) account for 55%, alcohol for 28%, and stimulants for 8% of the substances used by anesthesiologists as a "coping strategy" (Lefebvre & Kaufmann, 2017).

Emotional and medical education since early in medical school, and promoting engagement and a good social support are good strategies to help prevent and deal with psychological distress, burnout or, if it comes to that, substance abuse or any other kind of addiction.

IN SUMMARY

The work environment of anesthesiologists has seen a degree of change in the past 15 years. Technology has provided new ways of working, automating processes and highlighting the human interaction provided by the anesthesia team, and their role in leadership and coordination of care. Connectivity has also made communication easier and faster, although it might also become a distraction sometimes. Anesthesiologists need to be aware and in control of how they use these tools so that they don´t compromise quality of care. This faster pace, along with the characteristics of the anaesthesiologist work, has made apparent the psychological distress that doctors may suffer when hospitals are managed based solely on economic factors. Burnout syndrome and substance abuse to a much lesser extent, are real problems that require action from both the individual and the institution in order to avoid harm for both the medical provider and the patient.

MAKING SURE THE FUTURE LOOKS BRIGHT

There is a general acknowledgement that we need a vast cultural change, both for men and for women, individuals and institutions. This is the workforce that we have, when we look into the future:

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- A significant portion of aging physicians that can offer magnificent expertise and very valuable experience, but that need winding down from the physically challenging aspects of anesthesia;
- An increasingly higher proportion of women whose talent and contribution are currently under-utilized due to cultural constricts and a rigid, outdated work organization;
- A more diverse workforce that values work-life balance.

The way they develop their work needs to change, or we will see a good number of them leaving the specialty or providing low quality care due to burnout. We need to find a way to create better structures that could allow for a more psychologically safe work environment. We need to see how we can develop a work culture that keeps medical professionals highly motivated in staying up to date and developing research; providing safe, high quality medical care, putting the patient at the centre of their practice; and making sure that they can balance their personal and professional lives.

What do we Know that we can Apply?

Of all the issues we have talked about in this chapter, the most extensively researched are gender equity and burnout. There are no strong evidences to support any specific intervention, because there are many factors involved and their complexity is considerable. Not only every country is different, there are also big differences in workplace culture in neighbouring institutions.

Individual Based Strategies

Women physicians, as we have seen, face many barriers is career development. Throughout the past several decades, there has been an increase of initiatives to teach women how to navigate the male-centered work environment, how to negotiate, or how to develop a better work-life balance. This has been best achieved through peer-to-peer networking, mentoring programs (where the mentor can be either male or female), aiming at a better sharing of household responsibilities with partners, and seminars promoted by different organizations. Social support is seen as crucial. Awareness programs aimed at noticing and managing conscious and unconscious bias, and low intensity, often non malicious sexual harassment (such as sexist remarks or behaviours), have also proven very helpful (Mehta et al., 2017; Pfleiderer, Bortul, Palmisano, Rodde, & Hasebrook, 2018; Wong & Olusanya, 2017).

In dealing with burnout, physician directed interventions usually comprise cognitive behavioural techniques, courses on mindfulness, communication skills and coping strategies, like enhancing peer-to-peer networking, or enriching social life outside of work. Physical exercise or hobbies are also encouraged. Again, social support is seen as crucial (Rama-Maceiras et al., 2015).

Institution Based Strategies

Not surprisingly, the biggest challenge lies in changing the workplace environment and burnout than physician-oriented interventions (Wong & Olusanya, 2017). In gender equity, there is simply no other way to promote change.

Many academic hospitals, to provide an example, directly do not have work conditions suitable for a woman of any age, but especially young, trying to juggle family, clinical time, research and teaching. Female physicians tend to choose working environments that are more flexible, work less than full time

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and in average earn less than their male counterparts for doing the same job (Baird et al., 2015; Pfleiderer et al., 2018). Hospital managers need to be aware of this and address the issue accordingly. Human resources management has to be aligned with economic, academic and clinical management. This can only be achieved if the institution takes the problem seriously and commits to find solutions to remove barriers in work scheduling and career progression. Quotas have been long looked at suspiciously, but the fact is that, if you promote gender equality in boards, then women´s problems and needs will be recognized and addressed much earlier, and the solutions will be better fitted for them.

Gender equality in leadership positions is also beneficial as it creates more role models, a more open and welcoming environment, and an increase in visibility. In the short term, specific grants and scholarships can also help younger women establish a research career. In the long term, institutions have to find a way to accommodate the needs and dynamics of female doctors. The magic word here is flexibility.

This is a similar approach to addressing burnout from an organizational point of view. Changes in shift models that allow for reasonable rest time, comfortable on call rooms, varied job plans and planned sabbaticals are useful in improving the work environment and climate. Transparency from management, participation in decisions, team building exercises improve sense of value for the physician. And very importantly, the sense of fairness in work distribution and rewards is an important part of this work climate.

If we look at what these approaches have in common, two things stand out: there needs to be a commitment from top to down to change things; and flexible work plans within the possibilities of every institution should be implemented and actively supported.

CONCLUSION

It is virtually impossible to foresee in advance the needs and availability of anaesthesiologists across Europe. There are many different factors and every country has its own idiosyncrasy in what comes to culture, organization and structure of health services. We have reviewed the impact of some trends, such as the ageing specialist population, the increasing numbers of women working in anaesthesia, or cultural and societal changes in perception towards work-life balance.

Anaesthesiology is a challenging specialty and requires a high degree of engagement and motivation to endure long work hours, stressful situations and often tense work environments. To ensure quality and sustainable anaesthesia provision, wellbeing of this diverse population of anaesthesiologists needs be addressed. There are some individual interventions that are useful, but the biggest impact come from organizational, top to down changes. Achieving rational and flexible work hours, adequate compensation, and promotion of a workplace culture that fosters safety, would be key points to ensure the culture of safety, quality and motivation that will provide, in years to come, the doctor that will care of us.

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KEY TERMS AND DEFINITIONS

Burnout: Syndrome comprised of three main components: depersonalization (cynicism and detachment), emotional exhaustion (loss of motivation and hope) and low personal accomplishment (feelings of ineffectiveness and helplessness).

Coping Mechanisms: Set of psychological skills an individual uses consciously to deal with personal, interpersonal or environmental problems in order to minimize and manage stress and conflict.

Diversity: Understanding and acceptance of each individual uniqueness and value; it implies acceptance, respect and recognition that every individual can provide value to a community or organization.

Equality: Assumption that rights, responsibilities and opportunities will not depend on a specific trait such as being male or female, or belonging to a specific race or social group.

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Equity: Assumption that there will be fairness of treatment for everyone according to their respective needs.

Resilience: Mental processes and behaviours an individual uses to bounce back from a crisis or manage difficulty.

Second Generation Gender Bias: Practices that may appear neutral or non-sexist because they are applied to everyone, but which end up discriminating against women because they reflect the values of the men who created or developed the setting, usually a workplace. First-generation bias refers by contrast to a deliberate and intentional exclusion.

Winding Down Strategies: Set of strategies developed with the intention of gradually replacing more demanding or physical work by other type of work or work schedule, usually oriented to ageing professionals.

Workplace Connectivity: Work environment in which information and professionals are available constantly and with very little time delay through digital and mobile devices.

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Chapter 39
Cultural Diversity, Negotiation, and Organizational Leadership:
Their Relationship With the Competitiveness of Colombian Companies in a Global Context

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ABSTRACT

In globalization, the business world is becoming increasingly complex and challenging for small and medium companies in Latin American countries. There are variables that determine the success of a national and international business. In the latter case, one must have a good knowledge of the country's environment with which a commercial operation is carried out (competitors, political, economic, socio-cultural, legal, technological, etc). All these factors are undoubtedly important in the field of international treaties or agreements, as well as the precise information of the negotiating company. However, variables such as leadership and organizational culture and, in particular, cultural diversity are to a small extent considered as decisive factors of business competitiveness. The chapter describes the importance of the three variables as tools for the performance of Colombian companies in an international context and shows the results of the CW Model of the Culture Assistant, where seven key elements of cultural diversity are evaluated in organizations.

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INTRODUCTION

In a globalized market like today, the business world is becoming increasingly complex and challenging for small and medium-sized enterprises, especially for those in developing countries such as Colombia. There are several variables that determine the success of a business both nationally, but especially at the international level; in the latter case, one must have an excellent knowledge of the environment with the country that is conducting some commercial operation (competitors, political, economic, sociocultural, legal, technological, among other aspects). These factors are undoubtedly important in the field of international treaties or agreements, as well as the precise information of the negotiating company. Variables such as cultural diversity, leadership and especially the organizational culture are in a little measure considered as determinants of business competitiveness.

This chapter aims to describe the importance of these three variables as tools for the competitiveness of Colombian companies in an international market. Cultural diversity is based on different theories about organizational culture. For Martinez (2010) studies on organizational culture could be divided into two broad groups; on the one hand, "those who try to identify the variables that define the organizational culture and the relationship of these variables with results in the organizational field" (p. 167). The second group is characterized by representing "studies between cultures (cross-cultural), which seek to associate the traits of the cultures of countries or regions with characteristics of organizational cultures. In the latter case, characteristics such as leadership and organizational behavior are taken into account "(Martinez, 2010, p. 167). This second group focuses on the analysis of cultural diversity and its effects on organizational behavior.

The issue of what makes culture different in terms of attitudes, beliefs and behaviors at the level of countries, regions, and organizations has been a case of study and interest to researchers since the late '70s. As a result of these investigations, there are different models. As a pioneer in the development of these studies, Professor Geert Hofstede focused on six categories: distance of power, individualism Vs. Collectivism, avoidance of uncertainty, masculinity Vs. Femininity, long-term Vs. Short-Term orientation, indulgence Vs. Containment. Subsequently, adaptations emerged to the Hosfede model as the Intercultural Awareness Model, ICAM - developed by Dr. Paula Caligiuri, of the Center for Human Resource Strategy of Rutgers University and Caligiuri & Associates. This created a framework of eight aspects for better understanding and appreciation of cultural differences, which are: Hierarchical structures vs. Equalitarian, Formal vs. Informal style, Individual or Group Interests, Interpersonal Relationships vs. Transactional Relationships, Direct vs. Indirect Communication, Controlled vs. Fluid Time, External Control vs. Internal Control. Motivation State vs. Balance.

Dr. Caligiuri's research focuses on the reality that companies live in the world and how managers are incorporating cultural diversity in decision-making. Caligiuri (2013) states that, "it is difficult for CEOs to find talent with intercultural competencies and global leadership" and "organizations are concerned about the difficulty to find talent with intercultural competencies and global leadership, there are not many people, and that there are, does not have the capabilities we seek "(p.175).

In 2010 Drs. Michael S. Schell and Marian Stoltz-Loike proposed the CW Model-Culture Wizard Model, which is an adaptation of the Windham International Model. Solomon and Schell (2010) guide their model with seven key elements of cultural diversity that are: Hierarchy and Egalitarianism, Global approach, Relations, Communication styles, Orientation to time, Tolerance to change and motivation, Life-Work Balance and develop a global mindset. The research was carried out to 40 companies with global competencies in the services, industry, manufacturing and agricultural industry sectors.

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For the development of this particular investigation, the CW Model-Culture Wizard Model was applied to the managers of different Colombian companies. By using a questionnaire instrument of 35 questions, each variable of the CW model was measured within the organizations to determine the different levels of conduct of Colombian companies in relation to their cultural styles. In addition, an interview was conducted to know their perception as leaders facing the importance of intercultural relations in their international negotiations. It is essential to mention that, as we intensify on culture and its manifestations, we will learn to recognize, distinguish and adjust to being more productive and effective when directing through cultural diversity (Solomón and Schell, 2010).

CULTURAL DIVERSITY AND ORGANIZATIONAL CULTURE

Cultural diversity is an organizational aspect that is becoming increasingly important as a result of the globalization of economies, cultural influences, and social changes to which our societies are exposed. Therefore, many companies are aware that the linking of individuals from diverse cultural backgrounds brings new skills and ways of doing things that greatly encourages innovation (DuBrin, 2013). A study by the prestigious magazine Forbes (2011) about the relationship between diversity in the workforce and innovation within companies affirmed that, for multinational and transnational firms, diversity is not only the maintenance of a heterogeneous team of collaborators but to generate strategies to recruit, develop and maintain very diverse personnel that promotes innovation within the organization and use it for the creation of a competitive advantage.

In 1991, Taylor Cox and Stacy Blake from University of Michigan published significant research stating that the commercial trends associated with the growth of the globalization phenomena had the effect of increasing the mobility of different ethnic groups inside large corporations in North America. According to the researchers, the phenomenon of globalization and cultural diversity in companies is leading the attention of top managers towards the management of culture integrated to the administration of human resources in all levels inside the companies. The management literature has suggested that organizations should value diversity to improve organizational effectiveness. Cox & Blake (1991) showed in their study that there is a link between the management of diversity and organizational competitiveness. This is because organizations respond to globalization and labor migration with a focus on "valuing diversity." This results in better management of the diverse workforce, integrating it permanently into the structure of the organization and not simply sponsoring "cultural diversity" programs offered periodically by the human resources areas (DuBrin, 2013).

In their study, Cox and Blake (1991) argue that stimulating cultural and demographic diversity in an organization goes beyond merely achieving social responsibility goals since companies can benefit from cultural diversity in several more ways, such as:

1. **Cost Optimization:** Effective management of cultural diversity can reduce costs. A more effective administration of cultural diversity can increase the job satisfaction of different groups, which consequently reduces turnover, absenteeism and corresponding costs. A diversified organization that welcomes and grows a wide variety of employees will retain more of its minority and multicultural employees. Besides, effective diversity management helps avoid costly demands for allegations of discrimination based on age, race or gender.

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2. **Recruitment of Top Talent:** Companies that have a favorable track record in managing cultural diversity have a distinct advantage in recruiting talented people. Those companies that are known to welcome diversity willingly attract the most reliable candidates among women and racial and ethnic minorities. A labor shortage has given greater impetus to cultural diversity. During seasons of the low labor force, companies cannot afford to be considered racist, sexist or discriminate on the grounds of age or union membership.
3. **Better Marketing Strategies**: Good management of cultural diversity offers an advantage in marketing, which includes higher sales and profits in new places. A diverse workforce facilitates reaching multicultural markets.
4. **Increase in Creativity**: Diversity in the workforce can provide a company with useful advertising and propaganda ideas. A culturally diversified workforce or the company's advertising agency can help the company be placed in a favorable situation with the cultural groups it wishes to reach.
5. **Increased Exceptional Ability to Solve Problems**: The heterogeneity in the workforce can offer a company an advantage in creativity. The probability of finding creative solutions to problems is more considerable when attacked by a diversified group.
6. **Greater Organizational Flexibility**: The flexibility is that as policies and procedures are expanded, and operational methods become less standardized, the organization becomes more fluid and adaptable. Tolerance to different cultural views should lead to a greater openness to new ideas in general. The most important of all is if organizations succeed in overcoming resistance to change in the problematic area of acceptance of diversity.

Improving cross-cultural relationships requires organizations to understand the competitive scope and success factors related to cultural diversity and to achieve that understanding, companies must be aware of the importance of values, attitudes, and communication as a means of change in favor of multiculturalism. As mentioned above, the impact of culture on the style of management and leadership is another significant cultural influence on the behavior of organizations. Although personality factors are an essential element in management style, culture is also important because it serves as a guide to what constitutes acceptable behavior. Culture establishes the values that guide behavior. Moreover, just as with the dimensions of cultural values, there are also, following the study done by Geert Hofstede (1993), some national stereotypes of management styles in the world. However, the intelligent management of the diversity of cultures that exists in an organization is a powerful strategy to improve the organizational climate, encourage creativity and organizational learning, manage the knowledge of the company and strengthen a solid corporate reputation in today's markets. (Ramírez & León, 2008)

Leadership and Organizational Culture Generators of Value

In the current context of highly competitive markets that characterize the globalized economy of the 21st century, it is of fundamental importance to strive for greater competitiveness of companies. It is essential to recognize the socio-cultural determinants that contribute to the creation of value in organizations such as the establishment of a robust organizational culture intending to guarantee their survival and long-term success. As mentioned by Sarros, Cooper, and Santora (2008), the organizational culture has ceased to be a general issue for organizations, becoming a factor of great importance because of its ability to impact their strategic and operational management, becoming a competitive advantage for many companies today.

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According to Leon (2001), these organizational cultures are characterized by being collective since they originate from the set of behaviors, norms and values that several individuals share. This determines the way in which people interact with each other and with their organizations in situations of high uncertainty. This is dictated by conditions such as high volatility of markets, economic changes and technological advances, leading these interactions to provide their members with tools that help them individually and collectively to face these changing scenarios.

Organizational Culture and Leadership cannot be separated from their study since there is a high level of correlation between them. A productive organizational culture is one that is open and friendly. This is promoted from the top management where it is established what is important (values), how things are done (behavior) and how things work (norms), encouraging individuals to think about problems in new and creative ways and to generate organizational cultures that support individual and collective growth. (León, 2001).

For Chiavenato (2000, p.54) the leadership is "the influence of a person to another or a group according to a certain situation and is applied through the process of human communication in order to reach specific objectives." A leader does not proclaim itself as such and it is the group that determines its influence and recognizes him/her as a guide and example to follow.

In this same way Davis and Newstron (2004) establish that leadership is understood as "the process of directing the work activities of the members of a group and influencing them" (p.17). These authors define leadership as "the process that helps others to work with enthusiasm and towards certain objectives, that is, it is the fundamental act of the success of an organization and its people" (page 61). In order to become the enthusiastic motivator proposed by the different definitions of leadership, it is evident that a leader is a person with a sum of characteristics and capabilities that stand out above those who are not. For the transformational leadership theory of James MacGregor (1978) and Bernard M. Bass (1985) the leader should be: visionary, with strong values, managerial, strategic, motivating, supportive, negotiating, humble, aware of equality, has faith in workers and above all dominates his/her emotional intelligence.

According to the above, it could be said that transformational leadership would be more in line with this new perspective of change since one of its fundamental characteristics is to promote the development of competencies in the organization in which each one contributes to organizational change. The transactional leadership would be more in line with traditional models where the leaders establish the strategies and processes that lead to the achievement of the objectives rigidly, through an instructional and functional style, while the transformational leaders have the ability to change the perspective of its collaborators, motivate and inspire (Contreras Torres & Barbosa Ramírez, 2013)

At present, the survival of organizations depends to a great extent on transformational leadership which is directly associated with the organizational culture through the processes of establishment and socialization of corporate objectives and the motivation that workers receive from their executives. To achieve these goals, transformational leaders go beyond tasks that make them more effective in times of crisis and an inescapable factor in change processes as it favors adaptation. The charismatic qualities of these leaders are exacerbated in those moments when organizations are going through critical transformation processes that potentially compromise the survival or development of the organization (Chhokar, Brodbeck, & House, 2013). During times of change and uncertainty, the charismatic leader manages to influence the perception of success by the employees and this, in turn, increases the motivation, dedication, and commitment of the employees, improving the organizational culture.

Esser, Messner, and Meyer-Stamer (1996) (See Figure 1) see the factor of leadership as a concept of systemic competitiveness which has four levels: meso, meta, macro, and micro levels. This research

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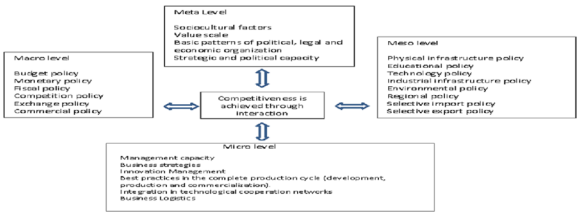
conceives business competitiveness as a set of capacities that integrate different factors that interact to give favorable conditions for the generation of value to both shareholders and customers of the company. For this specific case, it is understood that dimensions such as leadership, negotiating skills and cultural diversity are part of the organizational culture and are part of the micro level in the fields of management skills and business strategies, so they are also contributing factors to business competitiveness. They should be given special attention because people and not companies are who direct, negotiate and create the culture of an organization (Esser, Messner and Meyer-Stamer, 1996).

Figure 1. Determining factors of systemic competitiveness
Source: Cepal (2001)



NEGOTIATION AND LEADERSHIP

Negotiation is a process that is inherent to the human being. Every day is negotiated in different contexts and often without noticing it. However, for leaders in companies, it is essential to be aware of the implications of knowing how to negotiate, developing strategies and tactics that allow them to benefit in favor of the company's objectives.

Various concepts have about what is negotiation. For the Harvard school headed by professors Roger Fisher, William Ury and Bruce Patton, negotiation "is the basic way to get what we want from others" so "it is a round-trip communication designed to reach an agreement when you and the other party have some interests in common, but also some opposing interests "(Fisher, Ury and Patton, 2018, p.10).

For Puchol, L and Puchol, I (2014) a negotiation is "an activity in which two parties, whose interests are partly complementary and partly opposed, try to reach an agreement that satisfies most of the interests of one and the other, while facilitates the realization of new negotiations in the future "(p. 5).

For Acosta Vera (2018) the negotiation revolves around the solution of conflicts where the opposing interests of the parties come together to find solutions where both get something in return, which would imply that "the negotiation is not an end in itself, but a means to achieve objectives in a satisfactory way "(Acosta Vera, 2018, p. 21).

Based on the above, we can identify some of the main characteristics of the negotiation process that will serve as support for the managers of the companies in a context as competitive as the current one:

In addition to the aforementioned characteristics, it is imperative to be clear that whoever handles the most information in any negotiation is who will have the power within it. It must be taken into account that, in order to develop a win-win strategy, at some point in the negotiation, moments will be presented in which value must be claimed. For Malaret (2010, p. 40) "the key technique to claim value is: to modify the perceptions of the other party about their own alternatives and ours", to achieve this task in a successful way, one must have control of the negotiation, and to obtain it the most exceptional possible control over the information is required; of the parties, the context and the problem.

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Table 1. Negotiation characteristics

Negotiation characteristics
It is a process that has the purpose of signing or closing an agreement or resolving a conflict
It requires a broad knowledge and respect for the culture of the counterpart.
Confluence of: legal, social, political, economic and cultural aspects
It is based on communication and effective relationships
It feeds on strategies and tactics.
Requires preparation, planning and training

Source: Own elaboration

On the other hand, you must always have clear objectives and interests you want to achieve within the negotiation and what could be the possible objectives and interests of the counterpart. Added to this, it is essential to have clarity about what are the margins of negotiation that are counted so that each objective that is established (not only the price) has a margin of negotiation This is colloquially and in the business world is known as the ZOPA or Zone of Possible Agreement, "Without values that are located within the Zopa, there is no possibility of agreement" (Malaret, 2010, p. 40). This process of establishing objectives with clear, precise, quantifiable and measurable margins will facilitate the satisfaction of the interests of the company and the counterpart in a more objective manner and with benefits for both.

Phases of the Negotiation

For Professor Anibal Sierraalta Rios (2010), any negotiation will be faced with three phases that must be assimilated, perceived and prepared by the leaders who will negotiate. The first phase is the emotional one. Trust is the objective of this phase. It is the first approach with the counterpart where definitive soft, motivating, perhaps personal topics (depending on the culture) should be dealt with. The idea is not to start this phase with issues of negotiation. On the contrary, the objective is to know the other and that the other feels in confidence with the company and the people who are representing it. Before this emotional or initial phase, negotiation planning must be carried out. This implies the investigation and organization of information required concerning the people to be negotiated with, the tactics and strategies to be used, the problem or conflict deal with and the context in which the negotiation will take place.

The second phase of the negotiation is the Reflexive Phase. In this, the interests of the parties should begin to be identified and their motivations will be a key element of this identification. Most of the time the negotiators start presenting their positions that make it very difficult to see possible future agreements. Negotiating based on positions is a characteristic of the old school of negotiation that is also known as Distributive Negotiation. In the modern school or Harvard school, priority is given to knowing the interests of each of the parties, characteristic of the Integrative Negotiation; one of the simplest ways to get to know the interests is to ask, for ¿what? And ¿because? Find out about the real needs of the other party will be a start to present various options on the negotiating table and reach beneficial agreements for both parties.

The third and final phase of the negotiation is the Negocial phase, in which the concessions and exchanges are worked. In it, each of the options is reviewed and adapted to the needs of each one. In this phase, the decisions are made as to whether the negotiation is closed with or without an agreement. In both cases, any decision is valid due to the respect of the margins and the real interests of each one.

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Negotiation and Cultural Diversity

Whichever the definition of negotiation, it can be inferred that negotiation occurs for two reasons; in order to reach an agreement between the parties or to solve a conflict between them. In either case, it is necessary to have competencies that allow the leader to achieve the objectives of the organization. This aspect becomes a little more complicated when negotiating with people from different countries. One should try to analyze the alternatives to the negotiated agreement, determine the interests of each of the parties, establish the options and criteria of legitimacy, maintain an effective relationship and communication, but also all aspects of culture (customs, beliefs, set of values, among others) of the counterpart that could in one way or another affect the negotiation.

Companies that work in international markets have traditionally paid great attention to market studies and to the study of aspects such as legal, fiscal, etc. of the countries in which they work or want to work. However, in many cases, they have not paid the necessary attention to the study of the cultural aspect/barriers or to how the people with whom they are going to have to interrelate in these countries act (Fanjul, 2010, p. 13).

Thanks to globalization and the increase mentioned above in the flow of commercial relations, today companies that are immersed in international business must interact with different cultures, suppliers from different countries, and customers with diverse and increasingly complex needs. "Nowadays, it is widely accepted that cultural aspects can significantly affect the way international business is conducted and the international activity of the company" (Fanjul, 2010, p. 7).

To successfully manage through cultural diversity, it is necessary for the business leaders to develop their capacity to recognize and adapt to cultural signals so that they can intuitively identify global opportunities and be effective when dealing with people of different origins (Solomon and Schell, 2010). This is what is known as developing your Global Mentality. "Evidently, the greater their capacity to identify cultural differences and to appreciate them, the more capable they will be of directing culturally different behaviors" (Solomón and Schell, 2010, p. 12).

There are some manuals and international negotiation protocols that have been useful to the managers of companies. However, despite the diversity of behaviors that can be found by the negotiator when crossing borders, it is possible to identify and even measure patterns of different behavior to analyze cultures. This objective can be obtained through the CW Model (Culture Wizard Model).

CW Model (Culture Wizard Model).

The CW Model is an adaptation of the models of Windham International and ICA. It is also linked to the work of outstanding thinkers in this area such as "Geert Hofstede, Fons Trompenaars and Edward T. Hall" (Solomon and Schell, 2010, p. 52).

The CW Model is a cultural model that establishes seven characteristics that will help to understand the behaviors of the people with whom one works in different cultural contexts and even the own behaviors tied to the set of values of the society in which we relate.

Solomon and Schell state that the CW Model was "designed to be used in the ever-changing business world, where global professionals travel from one culture to another and work in multicultural teams" (2010, p. 52).

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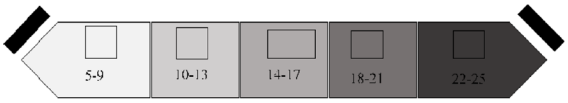
To achieve the purpose of this research, the CW Model was adapted to different Colombian companies in the services, industry, and manufacturing sectors. Two instruments based on the CW Model were applied to 40 process leaders who are immersed in the world of international business.

The instrument contained five questions per dimension with a Likert scale of 1 to 5, where 1 and 5 strongly agreed. Likewise, a score is established according to the final results by dimension, as follows: from 5-9 = Low, 10-13 = medium-low, 14-17 = medium, 18-21 = medium high and 22- 25 = High. See Figure 4

Figure 2. Measurement scale by dimensions of the CW model
Source: Cultural Diversity in Business (2010)



For the case of hierarchy and equality, the closer the result is to 25, the cultural behavior related to this dimension will be closer to the hierarchy (18-25). In this case, people assume the existence of levels with different rights. There is a distinction of classes and symbols of more marked status. In this score, the decision-making focuses on the leader without taking subordinates into account. On the contrary, if the result is closer to the minimum value that is 5, the culture of the company about this dimension will be more related to equality (5-13). This means that people believe in principles of equality. The leader considers the opinions of others decision making. Everyone in the company has the same opportunities and empowerment to achieve the objectives.

In the group approach, the higher the result means that the company or person surveyed is defined at work as part of a group and identify their identity, values, and achievements as a result of teamwork. Quite the contrary, if the result is closer to the lower value of the scale, it indicates that people stand out for individual actions and prefer to work alone for the fulfillment of their objectives.

In the relation's dimension, the lower values in the result of the instrument are associated with transactional behaviors. This means that the relationships are like a transaction, so they can be built and dissolved quickly and easily. In case it is not required anymore, no lasting relationships are contemplated in time to achieve success in business. On the contrary, if the result is higher, it will be understood that the culture is interpersonal. This means that the construction of relationships is crucial and fundamental to reach agreements with the counterpart. There is the opportunity to know the person and establish friendships in their work and business contexts.

For communication styles, two concepts are established: direct and indirect communication. The higher the result of the dimension, the communication style of the company or the behavior of people is understood more indirect what it involves not only verbal communication but body language, gestures, nonverbal signals, among other aspects that contemplate that the way things are said can be necessary for the construction of relationships. If the result of the dimension is lower, it relates to direct communication styles. For this type of people, communication should be concise, and without detours, the nonverbal language generates distrust and induces misunderstandings.

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Regarding the orientation towards time, if the results are higher for this type of cultures time is very valuable and it can be measured, saved, and controlled. Tardiness is considered a lack of commitment. This type of people tends to schedule and plan events ahead. On the other hand, if the result is close to the lowest score on the scale, the context of orientation to time will be low, leaving several decisions to improvisation and tardiness is regular and daily. They are characterized by being cultures that easily change plans and can easily breach their commitments resorting to more deadlines for it.

The higher the result of the tolerance to change dimension, the more tolerant to change is considered the organization or culture to which it is being measured. This means that people will tend to be more receptive to new ideas, to innovate and to see different ways of doing things. On the contrary, if the result has a lower score, this supposes aversion to change, they are cultures that like always to do the same, they feel the change like a threat and prefer to continue with conventional methods.

Finally, the motivation/balance dimension between work and life; here the highest scores are related to a higher status. For these people work has a significant place in their lives, they can work on weekends without a problem and it is more likely that work interferes with their personal lives. On the other hand, the lowest scores in this dimension will be related to the balance; for these cultures, success is not only related to work, but also their personal and family development. These people will not work weekends and do not conceive of showing off their achievements in the company nor in their negotiations.

To better understand the dimensions of the model, they will be defined and explained in the following table:

Culture and Negotiation Styles in Colombia

Culture can be defined as the set of beliefs, customs, knowledge, habits, ideas, behaviors, languages, norms, politics and values that people acquire when they are part of society. Authors define culture in different ways, for Schein (2004) refers to: For the case of hierarchy and egalitarianism, the closer the result is to 25, the cultural behavior related to this dimension will be closer to the hierarchy (18-25); in this case people clearly assume the existence of levels with different rights, there is distinction of classes and symbols of more marked status. In this score, the decision-making focuses on the leader without taking subordinates into account. On the contrary, if the result is closer to the minimum value that is 5, the culture of the company concerning this dimension will be more related to equality (5-13). Schein states there is:

A pattern of shared underlying assumptions that the group learns to the extent that it solves their problems of external adaptation and internal integration, which have worked hard enough to be considered valid and, therefore, worthy of being taught to new members as the correct way of perceiving, thinking and feeling in relation to these problems. (Schein, 2004, p.17)

Hofstede defines culture as "the collective programming of the mind that distinguishes the members of a group or category of people from others" (Hofstede, 2019, p.1). Hofstede's national culture model consists of six dimensions. Cultural dimensions represent independent preferences for one state of affairs over another that distinguish countries (rather than individuals) from each other. The power distance index, Individualism vs. collectivism, Masculinity vs. Femininity, Uncertainty prevention index, Long-term orientation vs. short-term normative orientation, Indulgences vs. restriction (Hofstede, 2019).

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Table 2. CW Model seven dimensions

The 7 key features of the CW Model	
Hierarchy and Equality	• How people see their relationship with power • How casually or formally people relate to each other • If a culture considers all people equal • How much social mobility exists • Who is responsible for making decisions? • The degree of autonomy and initiative that people believe they have
Group Focus	• The importance of the group in relation to the individual • If people want to be distinguished from the group, seen as individuals or considered as part of a particular group. • The idea that group harmony is necessary to achieve business goals • The importance of living and working together in harmony.
Relationships	• The importance of developing a personal relationship before doing business • The expectations and obligations involved in a relationship • If trust is assumed or earned • If the rules are interpreted in the same way or there are special conditions for friends • The value of connections
Communication Styles	• The ways in which societies use verbal and non-verbal language • The amount of information that people need to receive or share in order to understand a message • The frankness or subtlety of the language used by people • The way people use words or gestures to express their feelings or mood.
Time Orientation	• The degree of control that people believe they have over time. Do you control the time or is it out of your control? • The importance that society attributes to relationships in the face of the importance attributed to itineraries • Attitudes towards time management and punctuality • The comfort level with short-term planning compared to long-term planning. • The relevance of assigning start or end times of each social event or business meetings.
Tolerance to Change	• Openness to change and innovation • Willingness to take risks • If people think they control their destiny, or if the environment controls them • Preference for rules and structure • How the organization encourages and rewards the initiative and manages the failure
Motivation, Balance Between Life and Work	• How people identify the means to achieve a status through achievement or personal life; how people define their status in society based on their personal life or work achievements. • What impact does a person's work have on their self-esteem and self-perception? • The motivation for success: why people work and what this means • The value of the balance between life and work • The most motivating: free time or a promotion • What constitutes the status?.

Source: Own elaboration based on Solomon and Schell (2010)

In the study conducted by Fritz, Möllenberg and Chen (2000) test through a confirmatory factorial analysis the instrument that Chen and Starosta developed between 1996 and 2000 the model of competence in intercultural communication that integrates characteristics of both intercultural attitude and models of behavioral skills. For them,

Competence in intercultural communication is composed of three dimensions: intercultural awareness, intercultural sensitivity, and intercultural skills. Intercultural awareness refers to a person's ability to understand the similarities and differences in the cultures of others. Intercultural sensitivity refers to a person's emotional desire to recognize, appreciate and accept cultural differences. Intercultural skill

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refers to the ability of an individual to achieve communication objectives while interacting with people from other cultures. (Fritz, Möllenberg, Chen, 2000, p.167)

The result though to the authors that the instrument used by Chen and Starosta in the year 2000 in his model was satisfactory but that it could be further improved by measuring intercultural sensitivity through the development of a culture-free scale.

The increase in internationalization shows that companies from all commercial sectors of a country (primary sector, secondary sector, tertiary sector) must be competent when wanting to negotiate with other cultures.

With the above, for Colombian companies to increase their sales, have higher returns and competitive advantages, they must first know the country's culture and negotiating styles. Secondly, be strategic when presenting their products and services. Third, be innovative when becoming known to the national and international client. This depends on the challenge, size, and economic sector they want to venture into.

As defined by De la Vega Vallejo:

Organizational innovation, and particularly strategic renewal, becomes crucial and has a powerful impact on export performance. Therefore, it is clear that managers must dedicate at least as much effort to organizational innovation (strategy, structure, administrative processes and business model) as to technological innovation (products and services and production processes). (Analdex, 2017, p .5)

In order for there to be a thriving and innovative corporate culture that is projected over time, it must begin with the change of mentality that the leaders of the companies have. This is how they adequately transmit their ideas, goals, and projections for the future as well as the influence they have on their subordinates when wanting to substitute activities explicitly and concretely, which is gradually transformed until becoming part of the organizational culture. In the following figure is detailed in a better way what is expressed by Schein (2004) on this topic:

Figure 3. How culture is transformed?
Source. Organizational Culture - Schein (2004)

According to the evolution of the world economies that allow the development of the commercial relations among themselves and with the exposed by the authors mentioned previously, the organizations should be able to handle the cultural differences that they face according to the competencies and needs that the international market requires.

On the other hand, for Subirá and Blazquez (2013) state "the so-called competitiveness of a country is nothing more than the integral competitiveness of its companies" (parr.8) which through appropriate

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administrative management, constant innovation, projection that they have their products and services, the expansion of markets and the development of their global mentality, manage to generate value and be lasting over time (Subirá & Blazquez, 2013).

Some studies conducted on the culture of the Latin American negotiator assert that the negotiator of these regions is:

He is a friendly and informal talker, who is not very precise in his terms. He prefers to negotiate between friends which is the central basis of his trust in the counterpart. He does not sacrifice the short term to obtain advantages in the long run and prefers immediate satisfaction in each deal. He does not stand out for its punctuality and compliance, but it is very impatient when the other one does it; it is very flexible in the use of time, comes from a polychronic culture. Decisions are centralized at the highest level, and are made by the boss as an individual; the advisory or technical groups participate in the meetings, but the only real spokesperson is the boss (Ogliastri, 2005, p.43).

For Ogliastri (2001) in Colombia, the way is similar to the rest of Latin America, although the author recommends not making generalizations. This is a partial view of how foreigners view Colombian culture when doing business. When making commercial agreements, the Colombian wants to first establish a friendship with the possible client or supplier before starting a negotiation and always wants to take better advantage of it. According to Ogliastri, (2001) "Their conception of negotiating is bargaining: ask a lot and then get off. We are not distinguished by the preparation of the negotiations, but we are brilliant improvisers "(p.6). The Colombian uses different strategies and techniques to achieve what they want in his negotiations. They desire to fulfill the vision of the company to which they belong, focus on meeting the objectives and goals, respect hierarchies and are increasingly aware of the importance of communication and relationships for success in their possible agreements with the outside world.

Making a negotiation in Colombia is a ritual, through the exchange of ideas and customs; Colombian entrepreneurs want to establish empathy with the foreign supplier or buyer. Internationalization represents opportunities for companies to meet needs, market wishes and create lasting business links.

According to what Professor Enrique Ogliastri (2001) identified in a study carried out on fifty-one Colombians and Dutch people who had negotiated in the other country, the opinion of the Dutch culture when negotiating with Colombians is described below:

1. **Non-compliance**: Colombians are not fulfilled; they like to postpone dates; they are not serious with the agreements; they promise a lot, but are not ashamed to not comply with what they say.
2. **The Lack of Punctuality**: Shamelessly unpunctual, they arrive late with some good external excuse to the person.
3. **The Evasion of Responsibility**: Always the person in charge is another person; the bosses blame the subordinates and vice versa.
4. **Vagueness**: They are not precise or direct, they do not recognize when they do not know something or do not have the information, and they camouflage the reality of the negotiation.
5. **The Excess of Kindness**: They try to make friends by negotiating, personal relationships are vital, they believe that it is better to break the ice and that without friendly approaches the negotiations will have no firm foundations (Ogliastri, 2001, p.22)

For this reason, this research based on the application of the CW model helped to understand the behavior of business leaders in the different economic sectors of the country and their degree of organizational cultural diversity. The previous showed advances in the way the Colombian is perceived when

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negotiating. At present, there is much more awareness in the formation of soft skills to reach successful agreements and as generators of competitiveness in the organization.

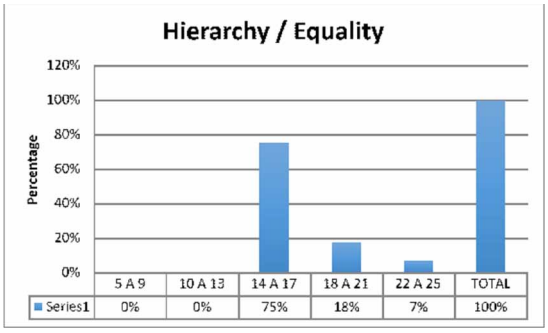
RESULTS

To identify the behavior of Colombian companies on the seven dimensions of the CW Model, a survey was conducted to forty managers from various sectors of the national economy, among which are: services, industry, and manufacturing. The following results are obtained:

Equality/Hierarchical

Therefore, for the dimension of Equality/Hierarchical, 75% of managers of companies in Colombia are in the middle level of the dimension because they consider that their superiors take their opinions into account at the time of making decisions within the organization. There are 18% in the upper middle level at this point. They perceive that the boss determines the priorities of the negotiation and 7% in the high level of the hierarchical dimension. According to the cultural style that these companies handle, people of higher hierarchical level within the company make the critical decisions, without taking into account the opinions of the subalterns.

Figure 4. Hierarchy and equality
Source. Own elaboration (2019)



All people are different in any cultural environment. Solomon and Schell state, (2010) "Within every culture, everyone has their own personal style and behavioral preferences that represent the diversity in that culture" (p.55).

Regarding international business, according to Solomon and Schell (2010) the countries that best manage the rating of this dimension are:

Colombia, according to the results of the surveys, ranks among the middle group between egalitarianism and Hierarchy, where there are countries such as Argentina, Belgium, France, among others.

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Table 3. Classifications by country for hierarchy / equality

Hierarchy / Equality						
Equality						**Hierarchy**
	Australia	United States	Argentina	Germany	Saudi Arabia	
	Canada	Finland	Belgium	Austria	Brunei	
	Denmark	Norway	France	Brazil	South Korea	
	Netherlands	Sweden	Ireland	Chile	United Arab Emirates	
	Israel		Poland	China	India	
	New Zealand		Qatar	Egypt	Indonesia	
			United Kingdom	Spain	Iran	
			Russia	Filipinas	Japan	
			Switzerland	Greece	Malaysia	
			Ukraine	Hong Kong	Pakistan	
				Italia		
				Mexico		
				Portugal		
				Czech Republic		
				Rumania		
				Singapore		
				Thailand		
				Taiwan		
				Turkey		
				Vietnam		

Source. Cultural Diversity in Business (2010)

Group Focus

Regarding this category, 48% of Colombian businessmen are located according to the dimension of the CW Model at the high mid-point of the hierarchy. Regarding the group focus, they agree that the resolution of the challenges should be done in a group manner. There are 43% located at a high level with a strong tendency to work as a team in their organizations. Only 9% of the employers surveyed consider that individual work is what prevails in their organizations and prefer to work towards achieving their objectives, developing their functions alone, even if they belong to a group.

Regarding international negotiations, the countries with greater recognition in the management of the qualification of the group focus dimension according to Solomon and Shell are:

Colombian business leaders are located at a high level of group focus, which translates to styles of countries such as Saudi Arabia, Mexico, Japan and others.

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Figure 5. Group Focus
Source: Own elaboration (2019)

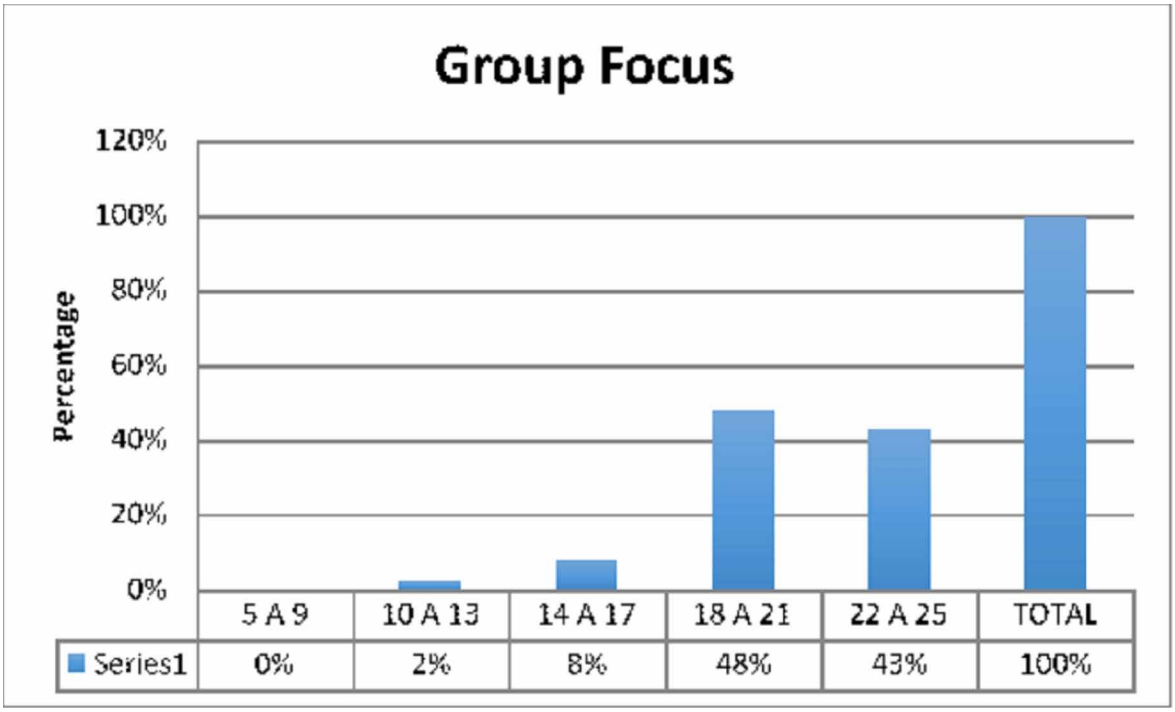

Table 4. Classification by country: group focus

GROUP FOCUS						
Individual						**Group Focus**
	Canada	Australia	Germany	Saudi Arabia	Brunei	
	Estados Unidos	Belgium	Argentina	Austria	South Korea	
	New Zealand	Denmark	Chile	Brazil	Indonesia	
		Finland	Spain	China	Japan	
		Holland	France	Egypt	Malaysia	
		Norway	Hong Kong	United Arab Emirates	Qatar	
		Poland	India	Filipinas	Vietnam	
		Czech Republic	Iran	Greece		
		Switzerland	Ireland	Italia		
			Israel	Mexico		
			Portugal	Pakistan		
			United Kingdom	Singapore		
			Rumania	Thailand		
			Russia	Taiwan		
			Sweden	Turkey		

Source. Cultural Diversity in Business (2010)

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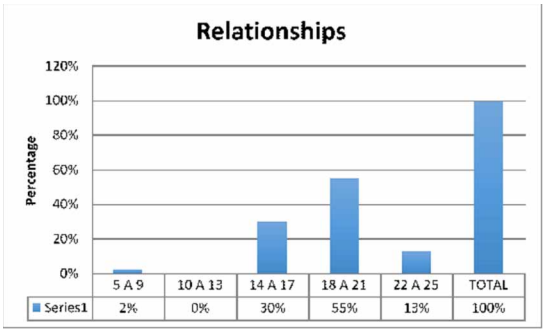
Relationships

Based on the relationships, 55% of managers of companies in Colombia prefer that their work team is made up of people compatible with each other, 13% is totally interpersonal, this way they work better, which means that 68% they are in a high level of the Relations dimension.

Figure 6. Relationships
Source: Own elaboration (2019)



For Solomon and Schell (2010) the classification by countries with respect to relationships is shown in Table 5.

In the realization of business and labor relations within companies, Colombian entrepreneurs are located at an interpersonal level, because they are easy to make friends and maintain healthy relationships for the fulfillment of goals within the company.

Communication Styles

To carry out a successful negotiation, one of the important components within it are the verbal and non-verbal communication styles. There are 75% of Colombian managers that focus on indirect communication when detailing the information they want to convey. Within this, only 2% consider the possibility of transmitting information directly clearly and concisely.

Figure 7. Communication
Source: Own elaboration (2019)

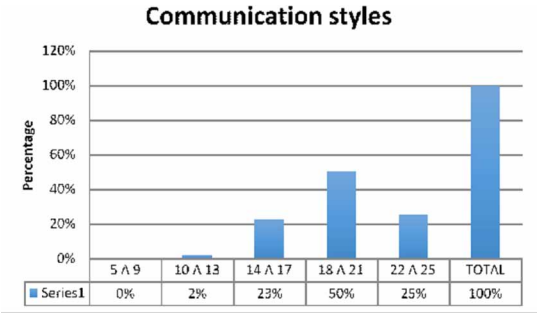


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Table 5. Classification by country: relationships

RELATIONSHIPS						
Transactional						**Interpersonal**
	Canada	Australia	Germany	Argentina	Saudi Arabia	
	Estados Unidos	Denmark	Austria	Brazil	South Korea	
		Finland	Belgium	Brunei	China	
		Holland	Hong Kong	Chile	United Arab Emirates	
		Norway	Ireland	Egypt	Iran	
		Poland	Israel	Spain		
		Czech Republic	New Zealand	Filipinas		
		Rumania	Unite Kingdom	France		
		Russia	Ukraine	Greece		
		Sweden	Vietnam	India		
		Switzerland		Indonesia		
				Italia		
				Japan		
				Malaysia		
				Mexico		
				Pakistan		
				Portugal		
				Qatar		
				Singapore		
				Thailand		
				Taiwan		
				Turkey		

Source. Cultural Diversity in Business (2010)

The classifications of countries according to this dimension by the authors are shown in Table 6.

The research shows that Colombia is at a high level of indirect communication which requires negotiations with a lot of non-verbal language, perhaps vagueness in the points to be discussed, and tend to concretize their ideas or elaborate wording in communication with their counterparts. This figure is seen in countries like Saudi Arabia, Korea, China, Japan, among others.

Orientation to Time

Based on the Orientation to time, 100% of business leaders consider punctuality as an important factor when carrying out any activity or negotiation. They indicate that the level of responsibility that you have with the schedules of your employees, partners, and customers will avoid inconveniences inside and outside the company.

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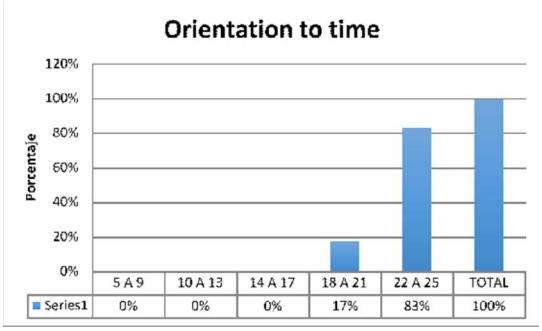
Table 6. Classification by country: communication

COMUNICATIÒN						
Direct						**Indirect**
	Germany	Australia	Argentina	Saudi Arabia	Brunei	
	Denmark	Austria	Brazil	South Korea	Filipinas	
	Holland	Belgium	Chile	China	India	
	Israel	Canada	Spain	Egypt	Indonesia	
	Norway	United States	Filipinas	United Arab Emirates	Japan	
	Sweden	New Zealand	France	Greece	Malaysia	
	Switzerland		Ireland	Hong Kong	Pakistan	
			Poland	Iran		
			Portugal	Italia		
			United Kingdom	Mexico		
			Czech Republic	Qatar		
			Rumania	Singapore		
			Russia	Thailand		
			Ukraine	Taiwan		
			Vietnam	Turkey		

Source. Cultural Diversity in Business (2010)

Figure 8. Orientation to time
Source: Own elaboration (2019)



The classification of the orientation to time according to the authors is shown in Table 7.

According to the surveys, Colombian businessmen are in the high classification with respect to the time management which they handle with the client and with their co-workers. Time management is imperative for all entrepreneurs to have successful negotiations within other cultures.

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Table 7. Classification by country: orientation to time

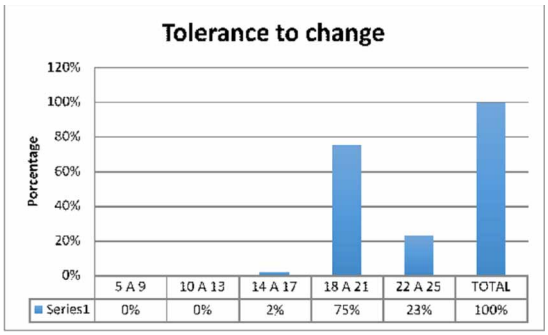
Orientation to time						
Low						**High**
	Saudi Arabia	Brazil	Argentina	Australia	Germany	
	United Arab Emirates	Brunei	China	Austria	Denmark	
	Spain	Chile	France	Belgium	United State	
	Thailand	Egypt	Ireland	Canada	Switzerland	
		Filipinas	Italia	South Korea		
		Greece	Norway	Finland		
		India	New Zealand	Hong Kong		
		Indonesia	Poland	Israel		
		Iran	Czech Republic	Japan		
		Malaysia	Rumania	Holland		
		Mexico	Russia	Sweden		
		Pakistan	Singapore	United Kingdom		
		Portugal	Taiwan			
		Qatar	Turkey			
		Vietnam	Ukraine			

Source. Cultural Diversity in Business (2010)

Tolerance to Change

For 75% of Colombian businessmen surveyed, they consider that the level of tolerance to change is high because it improves the internal processes of companies. There is 23% that are completely open to the risks that technologies and new ideas brought affect their daily life

Figure 9. Tolerance to change
Source: Own elaboration (2019)



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Tolerance to change according to the classification of Solomon and Schell is shown in Table 8.

Table 8. Classifications by countries: tolerance to change

TOLERANCE TO CHANGE						
Aversion to change						**Tolerance to change**
	Saudi Arabia	**Saudi Arabia**	**Germany**	**Holland**	**Australia**	
	Iran	Brunei	Argentina	Hong Kong	Canada	
		Chile	Austria	Israel		
		Egypt	Belgium	Japan		
		United Arab Emirates	Brazil	Norway		
		Filipinas	South Korea	New Zealand		
		Indonesia	China	United Kingdom		
		Mexico	Denmark	Singapore		
		Czech Republic	Spain			
		Russia	Estados Unidos			
		Thailand	Finland			
		Vietnam	France			
			Greece			
			India			
			Ireland			
			Italia			
			Malaysia			
			Pakistan			
			Poland			
			Portugal			
			Qatar			
			Rumania			
			Sweden			
			Switzerland			
			Taiwan			
			Turkey			
			Ukraine			

Source. Cultural Diversity in Business (2010)

Within this classification, Colombia level of tolerance for change is on a high scale. They are open to changes that bring technology and innovation to remain competitive in the international market. In Table 8 you can see that at this level there are countries like Holland, Australia, and Canada among others.

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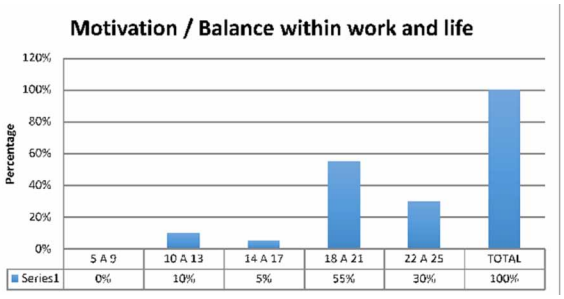
Motivation / Balance Within Work and Life

Finally, 85% of the managers interviewed agree that the balance between life and work of their employees is not respected. There are 10% that does handle it because they consider that the quality of life depends on the relationship that exists between the family and work so that there is an adequate balance.

Figure 10. Motivation/ balance within work and life
Source: Own elaboration (2019)



The classifications of countries according to this dimension by the authors are shown in Table 9.

In Colombia employers routinely request extra time to their workers without concern toward personal or family activities. It in line with the culture of countries such as China, the United States, Japan, Canada, Australia and others.

CONCLUSION

Through the interviews conducted, it is evident that for the accomplishment of international business, Colombian companies need to understand and appreciate the culture with which they want to negotiate and their environment. There is a lack of knowledge of 50% of the companies surveyed in regards to cultural diversity in their organizations and how to be able to relate to other countries. This impedes them from developing their global mentality and business relations.

Hierarchy / Equality

Analysis: It can be seen that in Colombia the opinion that different managers have about Hierarchy and Equality within companies is divided, in all, there is respect for the levels but wanting a formal and structured work environment depends on the sector to which the organization is focused. The boss always has the final decision and is responsible for the work of his team. However, the managers of the companies interviewed agreed that their employees and peers may feel empowered and consider that their opinions are increasingly heard by the boards of the organization.

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Table 9

MOTIVACION/ EQUILIBRIO ENTRE TRABAJO - VIDA						
Balance						**Status**
	Saudi Arabia	Germany	Argentina	Australia	China	
	United Arab Emirates	Brazil	Austria	Canada	Estados Unidos	
	Norway	Brunei	Belgium	South Korea	Japan	
		Chile	Denmark	Hong Kong		
		Egypt	Filipinas	Singapore		
		Span	Finland	Taiwan		
		France	Holland			
		Greece	Ireland			
		India	Israel			
		Indonesia	Italia			
		Iran	Pakistan			
		Malaysia	Poland			
		Mexico	United Kingdom			
		New Zealand	Rumania			
		Portugal	Russia			
		Qatar	Sweden			
		Czech Republic	Ukraine			
		Switzerland	Vietnam			
		Thailand				
		Turkey				

In the case of international negotiations, respect for the Hierarchy is fundamental when closing an agreement. In Asian countries it is convenient to establish meetings with people who are at the same level in the organizational structure of the participants which increasing confidence and intentions during the process. Managers with senior positions must be reserved for signing the contract.

As expressed by Castro:

Respect for the Hierarchy is fundamental, and negotiation must be established between people who are at the same level in the organizational structure of each of the participating companies; otherwise, the Chinese will doubt the sincerity of the intentions. (Castro, 2014, p.145)

Group Focus

Analysis: The above shows that the place that people occupy within an organization is the result of the differences that exist between them. In the work groups, there are leaders who are the ones who influence or contribute most of the time to achieve the goals in business. You cannot discard the qualities of individuals regardless of whether they participate in a group or individual way to be recognized; each will have a strategic position that benefits the team in general.

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An important factor when negotiating with other cultures is due to what was done previously by the organization's team. They provide the knowledge of each area, interpret and serve as mediators, and facilitate commercial transactions with the client.

According to Solomón and Schell (2010), "The approach describes whether people identify themselves as part of a group or by their responsibility and whether the work should include collective participation or a series of individual contributions" (p.20).

With the results obtained in this dimension, it can be seen that the Colombian culture depends on the group focus. People believe that there will be better results if teamwork is achieved. Colombian companies prefer group recognition than individual and the needs of the group over personal.

Relationships

The surveys suggest that 68% of the companies are focused on a high style of relations. This means that within the Colombian organizations', importance is given to the establishment of relations for the development of their negotiations. Although, Ogliastri (1996) in the investigation How Colombians negotiate with the Dutch, they concluded that the Colombian could become overconfident and that they liked very much to make previous relationships before starting their negotiations. These perceptions, a bit negative, do not differ much from the results of this investigation. However, in this case, the interviewees agreed that the culture in Colombia is amicable. They like to make their counterparts feel good and that joy should be more contemplated as a value and not as an excess of kindness. This is why well-conducted relationships with prior cultural knowledge of the counterpart become a key generator of value for future negotiations.

Companies today are changing their focus towards establishing long-term business relationships with both customers and suppliers. Negotiation is a fundamental part in the development of this relationship and it is necessary to recognize that the negotiator's strategy or style is influenced by culture and the ability to adapt to cultural differences in different markets (Castro, 2014, p.144)

Communication Styles

In relation to the results obtained from research in this dimension, it is observed that the largest proportion of Colombian managers (75%) who have had experience in the negotiation field are characterized by indirect communication. This finding clearly agrees with features of the Colombian culture. The Colombian negotiator tends to be very expressive using his gestures, looks, and everything that non-verbal language implies in his communication. This type of language is more concerned with how things are said than with what is being said. This is unlike cultures with more direct communication such as German, English or even the Americans themselves. This aspect can be clearly explained in what Cerda-Hergel (2006, p.331) states, "one of the most important objectives in Latin America is to strengthen personal contact and create a pleasant feeling of intimacy among the communicators. The way of communicating is as or more important than the message: what is communicated".

Just as for the CW model there are cultures of direct and indirect communication. Professor Edwar Hall (1959) also proposed two scenarios of communication culture: some of high context and others of low context. In this particular case, the culture of Colombian companies is said to be of high context, as well as most Latin American cultures. For this, it is important to mention what Cerda-Hergel raises in his study on the negotiation culture in Latin America:

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Latin American countries should be clearly classified as high context cultures in which much of what is communicated is implicit in the message and can be deciphered in body language, in gestures, in physical distance. In a high context culture, there are a lot of messages expressed but not explicitly stated because there is no need. In a low context culture on the other hand, most communication should be made explicit simply because it is expected that what is said is understood and nothing else. (Cerda-Hergel, 2006, p.332)

Time Orientation

One of the most important findings of this research was related to the time orientation dimension. Although, in most cultural studies of Colombia related to the negotiation, they gave as a result that Colombians see time as something infinite and that they do not contemplate it as a value in their negotiations, the results with this study were completely different. Professor Enrique Ogliastri (2000) in his research on how Colombians negotiate said that they wait for the end of time because that is when reality appears the true limits of the parties. In addition, it has always been considered that the Latin American and especially the Colombian does not consider time as a valuable resource in their businesses so that tardiness can be characteristic of them.

Despite all the above, the results of this study showed that for 100% of Colombian business leaders their time management and respect for this is fundamental in their relationships. This clearly indicates that as the Colombian has entered into international negotiation, in which the country's trade relations have diversified and that companies have begun to interact with other cultures, awareness of time has also increased. Now, as it is well stated by Cerda-Hergel (2006, p.339):

In Latin America, the rhythm of time is marked by social relations. People do not get carried away by the handcuffs of the clock as much as in the United States and in northern Europe. The events begin and end when the people of mutual agreement decide that the moment arrived.

This does not mean that the Colombian who is immersed in the world of international business is not conscious of time. It means that he does it in a different way but as some executives interviewed said; this is an issue of respect and it depends that the stereotypes of untimely and unfulfilled cultural change The development of their soft skills such as leadership, negotiation and the development of their global mentality have been key in this process.

Tolerance to Change

In relation to the tolerance to change dimension, the results of the research showed that 98% of the surveyed businessmen are tolerant to change. At present, there is much more awareness of the transformations that have arisen thanks to advances in communication and information technologies. It is for this reason; leaders with experience in international negotiations are receptive to new ideas such as innovation processes and tend to accept different ways of doing things.

The demands of customers are increasing. They want agility, quality, differentiation and good prices. In order to meet the needs of these clients, companies must adapt quickly to changes. Solomón and Schell (2010) propose, they must see changes and risks as a way to move forward and build in organizations.

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These results contract with a very marked vision that the Colombian culturally is aversive to change. In an investigation conducted by Robles, Contreras, Barbosa and Suárez in 2013, they concluded that:

According to Hofstede's cultural indexes (2001), the highest cultural dimension of Colombia is the evasion of uncertainty, which indicates that it is a society with a low level of tolerance to change and therefore prefer not to assume the risks that the changes generate. (Robles, Contreras, Barbosa & Juárez, 2013, p.400).

Leaders of companies that have experience in international business have a greater vision of the international marketplace. This makes their vision much wider and their perception of change which is a requirement to be competitive and thus achieve survival in the market.

Motivation / Work-life Balance

One of the biggest situations that affect the motivation dimension for most of the interviewed executives is the lack of balance between work and personal life. There are 85% of the interviewees stated that there is no clarity from its organizations regarding the time they must spend to the performance of their functions and the development of projects. This leads to many companies requesting in an implicit way that their managers work long hours regardless of whether it leads to a loss of quality of life reflected in mental and physical exhaustion and the detriment of manager`s interpersonal and family relationships.

The established about is supported by a recent study conducted by the OECD (2019) which states, that Colombians in general work 447 hours more than the average of the OECD member countries and are also well above average of the countries of the region. In contrast the report mentions that when comparing GDP per capita versus hours worked in the countries of the region, Colombia's low productivity can also be seen. Professor Iván Jaramillo interviewed by newspaper the republic states this is due to the fact that in Colombia it is necessary to restructure the labor system in relation to the welfare of the employee. The country companies prioritize the number of hours of the working day on the employee's actual productivity (Bohórquez, 2019). The interviewees translates into a loss of control over their lives and their ability to find a balance between their personal and their work affecting in the long term the competitiveness of companies. Therefore, it is necessary to look for an effective point of convergence between work and non-labor aspects since this leads to beneficial scenarios for both employees and their employers (Lazar, Osoian, & Ratiu, 2010).

In relation to the interviews conducted with Colombian businessmen, the points in which they coincide must be taken into account. According to their international experience to be successful in your negotiations with a global mindset in an intercultural environment are the following:

- You should never start a negotiation without knowing what is expected of it; it must be evident the scope of what is carried as an expectation in the negotiation.
- Know clearly which are the proper limits and the possible concessions, to know how far you can get in that negotiation.
- Think about all the players involved, not only those that are seen at first sight, but consider all the variables and all the actors that are going to participate in that business. Try to find out, within the preparations, everything that would be expected from the part that is being negotiated on this side, that contribute to the negotiation, and what they will ask and demand from the other side.

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- Be assertive in communication; be very clear to be able to build relationships of trust and long-term.
- Do not make excuses that are doubtful about the commitments to which one is committing.
- Remember that in some moments you have to be flexible in a negotiation because you have to know that at some point in that business you will have to give in, that is, you have to carry that parameter of flexibility to which you can go in a potential situation.
- You have to think that it is win-win business, it is a mistake to think that only the part that one represents will be winning.
- Keep an open mind to think within that negotiating position in new and proactive options that can be efficient for both parties, that is, have the ability to modify and learn, share the negotiation, the thoughts that have been looking for solutions that can be much more appropriate and convenient for both parties.

Finally, all these soft skills such as negotiation, leadership, and the ability to develop a global mindset in business will be definitive for the competitiveness of organizations in Colombia and anywhere in the world. Although the company should be seen as a holistic system of interaction between physical, financial and human resources (Tovar, 2012), it is very important to recognize that it is the people who administer and manage the rest of the resources. The importance of preparation in all these skills will allow companies to adapt to changes in the environment and general value not only to the client but also to all those who participate within the organization. For Tovar (2012, p.25), the success of an organization is:

… Is in the success of its people, directing all their talent, intelligence and ideas towards the improvement of the quality of products and services. We must also recognize that this responsibility cannot fall on a few managers. Innovation has to be permanent and general, this is only achieved with collective leadership, the use of talent and the creativity of all collaborators. This is the only guarantee of survival, growth and sustainability of any organization.

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Chapter 40
Applying Diversity-Intelligent Organizational Strategies for Competitive Advantage

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ABSTRACT

Competitive advantage is attained through talent development and leadership. Talented employees seek career advancement, change, and success. Organization leaders must integrate all employees into their strategic plans and can no longer exclude talented, diverse individuals. Key diversity improvement themes are revealed in this chapter to help leaders focus on areas within the organization to apply diversity intelligent strategies and eliminate institutional barriers that limit the success of diverse employees. Sustaining competitive advantage requires dedicated efforts of executive leaders in organizations.

INTRODUCTION

Extensive research and practical efforts have been dedicated to integrating diversity into organizations. These efforts using diversity management processes and systems within organizations have not been successful (Kalev, Dobbins, & Kelly, 2006). Diversity goals have been measured within teams and individually, but there remains a need for continued focus to achieve organizational diversity goals. It has been suggested that leaders need to develop diversity competencies (i.e. cultural, diversity, sensitivity, etc…) to motivate employees to accept diverse employees within the organization; however, diversity competence development has not previously been promoted using diversity intelligence (DQ). Diversity competencies are needed by all employees to promote diversity initiatives that the organization leadership supports; however, the competencies must first be displayed by the executive leadership of the organization. Executive leaders need DQ to champion diversity initiatives and efforts that they espouse to support.

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Kaye (1997) suggested that a diverse workforce poses both challenges and opportunities for an organization. The main organizational challenge is to develop the knowledge and flexibility of its diverse workforce to each employee's highest potential. She recommended that organization leaders ask the following questions to evaluate diversity development:

1. Are we satisfied with the state of the art of this organization's development opportunities for special needs groups?
2. How will each career development stage make our organization more responsive to diversity needs?
3. Are we using the skill identification information developed at the Profiling Stage, to give us a better picture of needs of any underrepresented groups?
4. Are the goals for developing diversity, set at the Targeting Stage, realistic?
5. Is the organization doing all it can to support these goals? (p. 227)

Organization leaders seek to create workplaces where employees from all backgrounds fully utilize their skills (Hughes, 2018c) and feel personally comfortable (Jackson & Joshi, 2001). Pfeffer (1992) noted that "organizations have career systems in place that tend to reward and encourage activities and skills more generously than others…Therefore, those who rise to positions of influence and who benefit from this career system have a particular set of skills and have engaged in a particular set of activities – those favored by the system" (p. 318). Therefore, upon entry into any organizational system, women and diverse individuals must build relationships and develop an understanding of the culture and career system they have entered (Banks, 2006a, 2006b). Pfeffer (1992) also stated that "It is critical that one be able to diagnose the relative power of various participants and comprehend the patterns of interdependence. One needs to know and understand not only the game, but also the players" (p. 49) and that "[d]eveloping and exercising power requires having both will and skill. It is the will that often seems to be missing" (p. 338). He also noted that "there is a greater sin than making mistakes or influencing others – the sin of doing nothing, of being passive in the face of great challenges and opportunities, and even great problems" (1992, p. 300). Executive leaders must display the will to influence greater diversity efforts within organizations. They cannot be passive observers of failed diversity efforts within organizations and career advancement opportunities of their diverse employees. They also cannot be passive aggressive towards protected class employees, themselves (Hughes & Brown, 2018).

There are many, self-imposed challenges faced by organization leaders as they attempt to apply diversity strategies for competitive advantage within their organizations. There are and have been many initiatives and strategies introduced inside organizations to improve diversity. Yet, those diversity strategies and initiatives have been met with resistance from organization leaders and employees (Hughes & Brown, 2018). Their resistance to diversity strategies and initiatives has been tolerated and continues to create diversity equity and inclusion problems for organizational employee productivity and growth (Dobbin, Kalev, & Kelly, 2007). Hughes (2015b) listed the following challenges that organizations faced in their diversity improvement efforts and those challenges remain today:

- The challenge of getting organization leaders to acknowledge the need for a clear definition of diversity that aligns with the federal government's definition.
- The challenge of establishing a culture of diversity excellence within organizations led by executive leadership.

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- The challenge of establishing diversity change initiatives that benefit all employees as they strive for career advancement.
- The challenge of establishing appropriate diversity training plans that are immersed throughout the organization.
- The challenge of integrating career development evaluation into the current performance evaluation systems of organizations.
- The challenge of embracing change.

Organization leaders must welcome and support change if they want to see their organizations succeed at executing diversity efforts (Duran & Lopez, 2015). The clear problem in all of the challenges above is a lack of executive leadership support for diversity change initiatives. Love (2017) found that the number one problem that trainers faced was management buy-in for training efforts.

Diversity change must begin at the top of organizations for it to be effective. This does not mean that all executive leaders must be diverse especially since not all diverse individuals are the same, even in the same diverse group (e.g. African Americans), nor do they have the same values. One faulty assumption that executive leaders often make is that if they promote someone into a diversity leadership position who looks like some of the diverse individuals in the organization, diversity problems will be solved. This has not proven to be a viable solution as evidenced by the continued diversity issues within organizations.

Often the individuals who are promoted to leadership positions do not have the power to affect change for others who are in similar positions to the position from which they were promoted. Many of them simply may not care about others because they have achieved their career goal and do not want to lose their newly attained, precarious position. They are at the mercy of the individual(s) who promoted them and thus their allegiance is to those individuals and not the group from which they emerged. This chapter is not advocating groupthink, but is providing reasoning of why it is not enough to promote the single, diverse employee to represent the whole group of other diverse employees. One is not enough.

Organization leaders must establish a culture that defines diversity in alignment with the federal government standard and not go beyond that definition when it comes to determining what diversity is within their organization by becoming diversity intelligent. They can become diversity intelligent by learning about the concept of diversity intelligence (DQ) (Hughes, 2016a; 2016b; 2018a; 2018b). Continued confusion regarding diversity cannot be acceptable if organization leaders expect organizations to achieve a competitive advantage through their diverse employees. Limiting the career aspirations of diverse employees also limits the diversity-related organization development goals of the organization.

Without diversity intelligent organizational strategies, organizations will not be able to overcome the challenge of establishing a culture of diversity excellence. Therefore, executive leaders must lead the diversity efforts for their organization by promoting individuals who are diversity intelligent and broadly educated to provide effective diversity leadership for all of its employees and not serve as a figurehead without any formal power. A culture of diversity excellence is achieved when all individuals in the organization understand the need for and/or have diversity, emotional, intellectual, and cultural intelligences and competencies to treat all employees fairly and honorably. Executive leaders must model the ethical characteristics that support the rejection of marginalized treatment for all diverse employees. This can only be accomplished if these leaders have been trained in DQ, ethical and legal issues, and workforce inter-personnel diversity as described in Chapter 1.

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Leaders have followers who watch their attitudes and actions and try to emulate them because they want to be like their leaders. Since this has been shown to be true, executive leaders must frankly encourage their followers to embrace diversity and hold them accountable for their attitude and actions (Hughes & Brown, 2018). Executive leaders must become accountable for establishing diversity intelligent change initiatives that benefit all employees. Many organizations present diversity change initiatives and nothing else is ever done to ensure that the initiatives achieve the goals and benefit all employees (Byrd, 2018). The subconscious nature of institutional racism subverts their efforts before they are ever properly implemented (Byrd & Scott, 2018). Employees are placed in the out group before they ever have a chance to participate in diversity change initiatives because of leaders' biases and institutional racism that is embedded in most cultures. Unless organization leaders establish and apply diversity intelligent organization strategies to immerse effective, credible diversity trainings such as DQ, ethical and legal issues, and workforce inter-personnel throughout the organization, the status quo will continue.

Recognizing that institutional racism exists and applying strategies to eradicate it began with the passage of the 1964 Civil Rights Act, which solidified the need for organization leaders to lead the efforts for change; yet, comprehensive change has not occurred in many organizations. The idea that diversity is only occurring because the organization has to do it to keep its federal contracts must come to an end. Organization leaders must do it because it is the right thing to do. DQ, ethics, and diversity must be integrated together within leadership development training programs so that true change can occur (Hughes 2018b; Hughes, 2019). Affirmative Action was the beginning reason for the initiation of hiring diverse employees, but many of these employees have shown that there is no difference in their work ethic, engagement, and commitment to the organization than any other employee. Yet, the stigma is allowed to persist and permeate throughout the culture of the organization to the extent that individual employees can be accused of playing the race card when they ask for equitable treatment within organizations. These types of attitudes and actions can only change if executive leaders make them intolerable by taking diversity intelligent actions (Hughes 2016a; Hughes, 2016b; Hughes, 2018a; Hughes, 2018b).

As long as the behavior of leaders who discriminate against protected class employees are tolerated within organizations, the individual career opportunities of protected class employees will be stifled, marginalized, and cloaked under suspicion despite the hard work exhibited by protected class employees. All leaders should establish career development evaluations that are integrated into the current performance evaluation systems. This would provide an opportunity for all employees to be objectively evaluated only if those who are conducting the evaluations are held accountable by executive leaders to be fair and just. If leaders are not held accountable for their unethical and sometimes illegal behavior, the system will be subjective and deemed irrelevant. This chapter is one resource that provides possible solutions, methods, and examples of how to apply diversity intelligent organization strategies within organizations for competitive advantage. The objectives of this chapter are to:

1. Describe ways that leaders can eliminate self-imposed diversity implementation problems.
2. Describe ways that leaders can apply diversity intelligent organization strategies for competitive advantage.

Background

Hughes (2015b) identified ten themes (see Table 1) related to the impact of diversity on organization and career development. These themes are not the only themes that influence diversity in organizations and

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employee career development. These are the diversity improvement key themes, highlighted by researchers, that organizations needed to improve if the organizations wanted to achieve a competitive advantage.

Table 1. Diversity improvement key themes

Key Themes	Sources
Clear definition of diversity	Hughes (2015b)
Effective diversity training	Hughes (2015b), Scott and Sims (2015)
Diversity careers	Scott and Sims (2015)
Diversity is immutable	Wittmer and Rudolph (2015)
Leadership development	Byrd and Hughes (2015); Scott and Sims (2015); Konyu-Fogel (2015)
Cultural change	Konyu-Fogel (2015)
Executive leadership commitment	Duran and Lopez (2015)
Affinity groups	Byrd and Hughes (2015); Duran and Lopez (2015)
Diversity competencies	Hughes (2015); Scott and Sims (2015); Konyu-Fogel (2015)
Socially marginalized employees	Byrd and Hughes (2015); Duran and Lopez (2015)

Hughes (2015b) suggested ways for organization leaders to address the key themes identified in Table 1 using updated solutions in Table 2 and the ten solutions and recommendations listed below:

1. Eliminate inconsistent definitions of diversity.
2. Provide Frame of Reference (FOR) and sensitivity training for all instructors (Hughes, 2015a).
3. Ensure that career positions for managing diversity have true power to implement and execute change initiatives. These diversity leaders must also be accountable for measurable results that enhance the careers of diverse employees.
4. Accept individuals as they are and eliminate the need for diversity mandates. Acknowledge and follow current laws and mandates such that employees can showcase their talents without judgment because of their immutable qualities.
5. Focus on cultural and diversity intelligence development for executive leadership.
6. Eliminate institutional barriers (Hughes, 2015a); Executive leaders must provide a supportive work environment.
7. Executive leaders should be unwavering in their commitment to supporting diversity. They must show this commitment by leading diversity efforts and stop passing it down to lower levels.
8. Organization leaders must support true affinity groups, not create diversity groups for superficial showcasing of the number of diverse employees within the organization.
9. Diversity competencies must truly promote diversity of thought. Not all diverse individuals think the same as their racial or ethnic groups. All employees must be accepted and not marginalized because of their differences in thought, appearance, and/or behavior. They must be included in the work environment.
10. There should be only one type or level of inclusion: Full inclusion.

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Table 2. Key diversity improvement themes, solutions, recommendations, and sources

Key Themes	Key Theme Identification Sources	Solutions and Recommendations	Solution and Recommendations Sources
Clear definition of diversity	Hughes (2015b)	Eliminate inconsistent definitions of diversity by developing diversity intelligent leaders.	Hughes (2016a, 2016b; 2018a, 2018b); Hughes and Brown (2018)
Effective Diversity Training	Hughes (2015a; 2015b); Scott and Sims (2015)	Frame of Reference (FOR) training for all instructors; Sensitivity training for all instructors	Hughes (2018c; 2019)
Diversity Careers	Hughes (2015b); Scott and Sims (2015)	Careers for managing diversity must have true power to implement and execute change initiatives. They must also be accountable for measurable results that enhance the careers of diverse employees.	Byrd and Scott (2018)
Diversity is Immutable	Wittmer and Rudolph (2015)	Accept individuals as they are and eliminate the need for diversity mandates. Acknowledge and follow current laws and mandates such that employees can showcase their talents without judgment because of immutable qualities.	Hughes (2016a; 2016b; 2018c; 2019)
Leadership Development	Byrd and Hughes (2015); Scott and Sims (2015); Konyu-Fogel (2015)	Focus on cultural and diversity intelligence development for executive leadership.	Hughes (2016 a; 2016b; 2018a, 2018b); Hughes and Brown (2018)
Cultural Change	Konyu-Fogel (2015); Hughes (2015a); Duran and Lopez (2015)	Elimination of institutional barriers; Executive leaders must provide a supportive work environment.	Hughes and Brown (2018)
Executive Leadership Commitment	Duran and Lopez 2015)	Executive leaders should be unwavering in their commitment to supporting diversity. They must show this commitment by leading diversity efforts and stop passing it down to lower levels.	Hughes (2016a; 2016b); Hughes and Brown (2018); Byrd (2018)
Affinity Groups	Byrd and Hughes (2015); Duran and Lopez (2015)	Organization leaders must support true affinity groups, not create diversity groups for superficial showcasing of the number of diverse employees within the organization.	Byrd (2018)
Diversity Competencies	Hughes (2015b); Scott and Sims (2015); Konyu-Fogel (2015)	Diversity competencies must truly promote diversity of thought. Not all diverse individuals think the same as their racial or ethnic groups.	Hughes (2016 a; 2016b; 2018a, 2018b, 2018c)
Socially Marginalized Employees	Byrd and Hughes (2015); Duran and Lopez (2015)	All employees must be accepted and not marginalized because of their differences in thought, appearance, and/or behavior. They must be included in the work environment. There should be only one type or level of inclusion: Full inclusion.	Hughes (2016a; 2016b; 2018a, 2018b, 2018c); Lawson and Hughes, 2020

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There must also be an elimination of barriers within the work context and environments (Byrd & Scott, 2018; Hughes, 2018c). Organization leaders must change the work context that supports the premise that the diverse person is the problem as opposed to the treatment of or attitude displayed towards the diverse employee as the problem. Both societal and organizational adjustments are needed (Byrd & Scott, 2018) for organizational social justice to occur (Byrd, 2018). Organizational social justice shifts the focus of social justice from fairness and equity in implementing policies and allocating resources to a philosophical principle of human dignity and respect for all individuals (Byrd, 2018). Therefore, organizational social justice is "the ideology that organizations, operating through a representing agent, seek to achieve a state whereby human dignity as well as equality are practiced and upheld" (Byrd, 2012, p. 120). Fundamental to the philosophy of organizational social justice is non-tolerance for demeaning behaviors and attitudes that subjects marginalized work groups to an exclusive and unwelcoming workplace culture (Byrd, 2018).

Language and communication, which are mutable, must be revised when interacting with protected class employees (Robbins, 2013); otherwise, the organization's impact on diversity will be negligible. There is a lack of DQ amongst organization leaders with regards to the plight of protected class employees who seek only to treated justly within organizations. Their continued mistreatment reflects an unwillingness of executive leadership to manage diversity efforts effectively. This lack of executive leadership support for diversity efforts permeates the entire culture of the organization. Without actionable efforts, there is a perception that executive leaders are sending messages that are intentionally confusing to their subordinates.

Organization leaders must eliminate barriers that protected class employees' encounter in the workplace. HRD professionals can help organizations eliminate these protected class barriers through understanding and developing ethical and legal issues training and DQ training within leadership development programs (Hughes, 2019). Table 3 provides a list of the protected class group; some of the barriers they encounter; and how their leaders and peers have exhibited these barriers, through their actions, towards protected class employees within the organization.

Table 3. Elimination of barriers faced by protected class employees for improved organization and career development

Protected Class	Types of Barriers	Exhibited through
Race	Prejudice, behavioral, attitudinal (stereotype, racism); social marginalization	Deliberate exclusion; language and communication style
Age	Stereotype; social marginalization	Language and communication style
Ethnicity		
Disability	Architectural (Thoms & Burton, 2015); Attitudinal; Social marginalization	Social isolation and oppression
National Origin	Prejudice, behavioral, attitudinal stereotype	Deliberate exclusion; language and communication style
Religion	Unfavorable treatment because of religious affiliation including Christianity, Hinduism, Judaism, Islam, and other religious groups	Segregation, harassment, exclusion
Sex	Bias, behavioral and attitudinal stereotypes	Sexual harassment, exclusion
Sexual orientation	Bias, behavioral and attitudinal stereotypes	Sexual harassment, exclusion

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Leaders must acknowledge their personal, discriminatory biases (Hughes & Brown, 2018) and become diversity intelligent. Having leaders and employees know who is a protected class employee and why they are protected is essential for organizations to move forward in their diversity efforts (Hughes 2016a; 2016b; 2018a; 2018b; 2018c; 2019). Most protected class employees are recognizable because of their appearance, but sometimes the diversity amongst employees is not recognizable. These unknown differences can lead to unwarranted biases and unfair treatment. When organizations establish work environments that are comfortable for all employees, unknown differences may be revealed and employees will feel free to be who they are. For example, employees will no longer feel the need to hide their sexual orientation, religious beliefs, or disabilities.

All employees have value (Hughes, 2010) that they bring to the organization and potential for that value to be strengthened within the organization (Hughes, 2018c). One way to strengthen their value is through location or placement within the organization (Banks, 2006a, 2006b; Banks & Nafukho, 2008, Holland, 1973; Hughes, 2018c; Kaye, 1997, Schein, 1975, Super, 2002; Vardi, 1980; Vroom & MacCrimmon, 1968). Employees offer internal and external location value (Hughes, 2012) and "organizations develop rules or policies that impose some control over personnel movements, such as retirement at 65, promotion from within, giving new college graduates a variety of training assignments before assigning them to positions of responsibility and so on" (Vroom & MacCrimmon, 1968, p. 28). Employees and organizations must work together to enhance the employees' value to the organization. Diverse employees also have location value that the organization's leaders must be diversity intelligent enough to appreciate regardless of position, job title, or physical placement.

Talent Development

Talent development is indispensable to organizations achieving competitive advantage through its employees. The Association for Talent Development (ATD) previously stated that "to sustain a competitive advantage in today's knowledge economy, organizations must create a learning culture that supports employee development, a high level of engagement, and opportunities to achieve higher performance" (ASTD Economic Survival Guide, 2008, p.1). Diverse employees' development contributes to the competitive advantage of organizations and must continue to be a focus for organizations to sustain and increase their competitiveness (Hughes, 2018b; 2018c).

Protected class employees must also be engaged in the success of the organization, thus their job attitudes are also important to their development and subsequent performance. According to Holton (2005)

[J]ob attitudes should affect both motivation to learn and motivation to transfer learning…[and] presumes that individuals who have more positive attitudes toward their organization would be more likely to engage in learning that will benefit the organization through improved performance. (p. 41)

Organization leaders must create a diversity inclusive culture that ensures that protected class employees can have a positive attitude towards their organization. The work environment includes transfer climate, social support by supervisors and peers, and opportunity to perform learning and has been identified as a key factor in the transfer of training (Baldwin & Ford, 1988; Burke & Hutchins, 2007; Ford & Weissbein, 1997; Noe, 1986; Noe & Schmitt, 1986; Tannenbaum & Yukl, 1992). Rouiller and Goldstein's (1993) revealed "the importance of positive organizational transfer climate in order for individuals to

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transfer training from the training program into the work organization" (p. 388). If the organization's climate is not open to receiving new diversity intelligent information and training concepts, it will not be successful in its equity and inclusion efforts.

Facteau, Dobbins, Ladd, and Kudishch (1995) found that pre-training motivation was significantly related to social support and supervisor, subordinate, and senior management support. They recommended factors of support from supervisors, provision of opportunities to use newly acquired training skills, rewarding skill transfer, and providing feedback on attempts to utilize training in the workplace as key factors in the transfer of training. Talent development does not occur if the training is not transferred from the classroom back to the work environment. If the employees do not apply what they learn during training on the job, it is of no use to the organization to invest in training efforts. Leaders who attend leadership development training on DQ, ethical and legal issues, and workforce inter-personnel diversity and do not apply their training knowledge in their work environment are hindering diversity improvement efforts.

Cromwell and Kolb (2004) examined the transfer of training and the work environment relative to supervisors, peers, organizations, and peer networks support and found that employees reported higher application of knowledge and skills learned through the training program if they were supported by their organization and supervisor/peers. Diverse employees must have the support of all stakeholders within the work environment so that they can transfer their skills to the work environment and pursue advancement opportunities to enhance their careers. Leaders must have support of executive leadership to apply diversity intelligent strategies in the workplace.

DIFFUSION OF DIVERSITY TRAINING

Rogers' (2003) diffusion of innovation theory explains how change, an innovation, can be communicated and adopted within organizations. He defined diffusion as "the process by which (1) an *innovation* (2) is *communicated* through certain *channels* (3) *over time* (4) among the members of a *social system*" (p. 11). Innovations are ideas, objects, or practices that are perceived as new to individuals or units of adoption. Communication channels are the tools through which messages are conveyed among individuals within an organization system. The element of time is conveyed through all components of diffusion of an innovation from first knowledge to adoption or rejection, individual adoption compared to adoption of other members, and in the rate an innovation is adopted by members within a specific period of time (Rogers, 2003). The social system is the interaction of the units of groups or individuals engaged in problem solving that is focused on the attainment of a common goal (Rogers, 2003). This is one model that organization leaders can use to diffuse organizations' diversity definition and initiatives throughout their organizations.

The social system of an organization can either impede or facilitate the diffusion of the innovation (Rogers, 2003). Social systems possess norms or recognized behavioral patterns by members of the system, which Rogers's defined as "a range of tolerable behavior and serve as a guide or standard for the behavior of members of a social system. The norms of a system tell individuals what behavior they are expected to perform" (Rogers, 2003, p. 26). Organization leaders can tell their employees through their own behavior how they are to perform towards diverse employees. They have ultimate influence over the systems' acceptable norms.

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Included within social systems are opinion leaders and change agents (Rogers, 2003) and opinion leadership is defined as "the degree to which an individual is able to influence other individuals' attitudes or overt behavior in a desired way with relative frequency" (p. 27). Opinion leaders typically possess unique positions that are influential within the communication structure of the system. The position as opinion leader allows them to be instruments for change agents who influence "innovation-decisions in a direction deemed desirable by a change agency" (Rogers, 2003, p. 27). Therefore, if organization leaders want to change the diversity culture of their organization, they must take on the role of opinion leader with a positive opinion of diverse employees and their potential to impact organization and career development within the organization.

Within the time element of Rogers' (2003) diffusion of innovation is the innovation-decision process that is relevant to how diversity training can be transferred or diffused throughout organizations. The innovation-decision process has five stages through which an individual(s), progresses. They are: 1) initial introduction to the innovation (knowledge), 2) development of an attitude regarding the innovation (persuasion), 3) decision to adopt or reject the innovation (decision), 4) implementation, and 5) confirmation of the decision (Rogers, 2003).

With regard to diversity training in step 1, organization leaders can introduce the federal government's definition of who diverse employees are to all employees of the organization. This is an example of using their DQ. During step 2, organization leaders can persuade employees that diverse employees are a positive addition to the organization and not simply token employees who are there because the law requires that there be diverse employees within organizations. In step 3, organization leaders must decide to adopt a culture of diversity excellence that supports all diverse employees. In step 4, organization leaders can implement diversity intelligent initiatives to develop diverse employees so that they can attain career goals within a career management system that is aligned with the employees' potential and the organization's needs (Hughes, 2018c). In step 5, organization leaders can confirm the success of their career development efforts through a career development evaluation system (Hughes, 2015b).

MAIN FOCUS OF THE CHAPTER

Understanding who is represented as protected class individuals within organizations requires leaders to have DQ. The variety of definitions for diversity will continue; however, there must be a clear understanding of protected class employees within organizations. With the convoluted uses of the term diversity, diverse employees are unsure of what message the organization is conveying when they say they are supportive of diversity. Are they supportive of their diverse employees as defined by the federal government, or are they supportive of their diversity of efforts with regards to policies and strategies that they are trying to implement to achieve business strategy goals? The diverse employees must be distinguished from the diverse efforts of the organization. This can be accomplished through DQ training.

Effective DQ training is needed for all employees within organizations and must become a central component of leadership development programs (Hughes, 2018b). Protected class employees are often tasked to lead diversity efforts when they are often the least powerful employees within organizations. Thus, the diversity message is weakened before they ever utter a word. Many protected class employees only have but their physical, immutable diversity characteristic to identify them as a diverse employee. They have had no official diversity education or training to lead diversity efforts. Yet, they are promoted as Chief Diversity Officers, Vice Chancellors of Diversity, and other executive leadership roles and

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they have nothing to offer to other diverse employees beyond their titles. It is a shameful display and exploitation of employees to suggest that they place their hope in titles of individuals without power to help them advance their careers. A meeting of all diverse employees is just that, a meeting. It is not an opportunity for growth, development, and advancement.

Diversity careers are needed within organizations, but they are of no use, if they have no value to the employees who are dependent upon them for success. Diversity career leaders must be developed to advance career development opportunities for diverse employees organizations not to provide a showcased image of immutable characteristics that no diverse employee can change. They must develop their own DQ to be able to champion diversity intelligent career strategies to assist employees.

To achieve this cultural change within the diversity career positions, the organization must show that there are true career advancement opportunities for diverse employees. Diverse employees cannot be expected to continuously endure marginalized treatment through adverse socialization within the organization. Protected class employees are socially marginalized to the extent that they never have an opportunity to ever feel included within the organization. Executive leadership must be committed to change and support the development of true affinity groups of employees. Diverse employees want safe spaces within their affinity groups when the group's focus is on discussing their struggles. Having others invade the group to share their struggles, which are not the same from the perspective of the diverse group members, is an insult. It is insulting for LGBTQ individuals who do not have the same experiences as African Americans to invade their space. This is different if the LGBTQ individual is also African American. Having diverse employees interact amongst themselves is sometimes self-defeating for the organization when they are not provided the resources needed to advance their careers. Instead, there should be affinity groups developed in which all employees who have similar interests related to their career advancement can come together in ways that are conducive to organization and career development. Leaders must reject the idea of any of their employees being socially marginalized or ostracized within the organization.

ISSUES, CONTROVERSIES, PROBLEMS

Full Inclusion

Full inclusion of protected class employees is the only acceptable level of inclusion within organizations. Organization leaders must understand, embrace, and value full inclusion and understand how the lack of full inclusion affects protected class employees' performance. Limiting inclusion or segmenting it sends the message to protected class employees that they are not truly wanted within the organization. The individuals' knowledge, skills, and abilities (KSAs) may be needed by the organization, but some leaders in the organization do not want to work with protected class employees. They only want the individual's KSAs. Unfortunately, for these types of leaders, they cannot separate employees from their KSAs. Inclusion has been the buzzword when referring to diversity, but if the organization leaders have to be told that they need to include their diverse employees, the message becomes clear that their efforts have been ineffective. The protected class employees are offended that they have been, intentionally, excluded from opportunities to grow and advance their careers within organizations.

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Barriers to Career Advancement

Diverse employees continue to face barriers to their career advancement. Workplace environmental conditions remain most critical to the employee's success because it is such a broad barrier, most employees cannot escape its effect on their performance unless they leave the organization. Hofacker (2014) described nine workplace environmental conditions that are detrimental to the success of diverse employees in the workplace. The workplace environmental conditions are: bias, homophily, homosocial reproduction, occupational segregation, social segregation, spatial segregation, stereotype threat, structural segregation, and subtle forms of racism. The condition of bias is manifested by "stereotyping and bias among managers who make hiring and promotion decisions" (Dobbin, Kalev, & Kelly, 2007, p. 23). "Homophily is [demonstrated by] the principle that a contact between similar people occurs at a higher rate than among dissimilar people" McPherson, Smith-Lovin, & Cook, 2001, p. 416). Homosocial reproduction is exposed when "Managers tend to carefully guard power and privilege for those who fit in, for those they see as 'their kind' … reproducing themselves "in their own image" (Kanter, 1977, p. 48). Occupational segregation is exhibited by the channeling of a minority into what is considered to be a minority job (Albelda, 1985; Maume, 1999; Sokoloff, 1992; Tatum, 1999; Thomas, 2005; Vallas, 2003). Social segregation is revealed when "minorities lack access to important workplace relationships that are important in developing one's career" (Thomas, 2005 p. 79). Spatial segregation is demonstrated when occupational segregation occurs through locating minorities in minority jobs together in the workplace (Albelda, 1985; Vallas, 2003). Stereotype threat is revealed when "stereotypes and negative expectations often create obstacles and difficulties for minority employees in U.S. organizations" (Chemers, Zurbriggen, Syed, Goza & Bearman, 2011, p. 486). Structural segregation is displayed when minorities are overrepresented at the lower levels of the organization and underrepresented at the higher levels (Thomas, 2005; Giscombe & Mattis, 2002). Subtle forms of racism are shown when white prejudice is conveyed towards diverse employees through white opposition to demands and resentment at their [diverse employees'] presumed special treatment (Feldman & Huddy, 2005; Thomas, 2005). Many protected class employees can share instances where they experienced at least one, if not all, of these environmental conditions as they have attempted to do their jobs and advance their careers. No employee should have to endure theses type of environments and perform at optimum levels. Leaders must be willing to apply diversity intelligent strategies to solve these problems.

SOLUTIONS AND RECOMMENDATIONS

As organization leaders, career counselors, human resource development professionals, and diversity leaders endeavor to expand diversity efforts within organizations, they need to use relevant tools and resources. HRD professionals must partner with organization leaders to develop ways to apply diversity intelligent strategies for competitive advantage within organizations. In addition to all of the recommendations that have been covered earlier in this chapter, some additional diversity intelligent strategies are:

1. *Develop leaders' DQ.*

DQ needs to be developed by leaders in organizations so that they can work better with protected class employees and develop all employees to their highest potential in the workplace (Hughes, 2016a;

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Hughes 2016b; Hughes, 2018b). When leaders become diversity intelligent, they can apply full inclusion strategies that are present within organizations and ensure a competitive advantage is accomplished through people.

2. *Use HRD communication channels to integrate ethics, diversity, and DQ to develop leaders.*

HRD professionals have many communication channels within organizations to develop leaders. They must use these channels to integrate ethics, diversity, and DQ (Hughes & Camargo, 2019). Ethics and diversity are considered crucial skills that leaders must display when interacting with others and both have no concrete, right answers to solve continuous problems. The addition of DQ to the diversity and ethics conversation only enhances the opportunity to improve communication among different employees regardless of the communication methods used. Combining the two would strengthen both efforts (Hughes, 2019).

3. *Develop new leadership development programs or enhance current leadership development programs.*

There is a gap in what HRD professionals and diversity professionals have taught leaders and what is being applied in the workplace. Therefore, new and or enhanced leadership development programs must be developed that integrate diversity and ethics and allow leaders to use their DQ to solve diversity and ethics problems. Leaders will then be able to distinguish the legal ramifications of not solving diversity problems versus recognizing a diversity problem that may be an ethical concern. Protected class discrimination problems are not ethical problems. Leaders to protect their organizations from lawsuits, EEOC filings, and department of labor complaints must legally address protected class discrimination problems.

FUTURE RESEARCH DIRECTIONS

More research is needed to advocate full inclusion of diverse employees within the workplace and an elimination of all nine of the environmental condition barriers. Organization leaders must begin to question why the money that they have invested in diversity efforts has not produced the desired results. Some questions to consider include:

1. What does diversity mean within your organization?
2. What is the value of diverse employees to the culture of the organization?
3. Why is your organization supporting research efforts that only validate the status quo? Research must be innovative to influence change.
4. Why are employees allowed to be socially marginalized within the organization?
5. To what extent is the culture of the organization a part of the strategic plan?
6. What will the organization gain if it creates opportunities for all its employees?
7. Are there rules for conformity to the status quo that must be eradicated from the organization? (Hughes, 2015b, p. 285)

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Organizations have social cultures that must be effectively managed to include all employees. Future research studies can be designed to measure the extent to which the social culture of the organization is designed to exclude diverse employees and why? Why are certain groups infringing on the safe spaces of protected class groups in the workplace?

Another area of research to be explored would be what type of leadership characteristics does a leader who supports diversity efforts exhibit? Do they have DQ? Are they aware of institutional barriers and do they have diversity competencies, cultural competencies, sensitivity, and a frame of reference for successfully interacting with diverse employees? Knowing personal capabilities is critical when trying to lead others. Often leaders do not know their employees' needs; they only know what they want them to do. Future research could assess the extent to which organization leaders know and understand the needs of their diverse employees (Hughes, 2018c).

CONCLUSION

This chapter has revealed key diversity improvement themes. Providing and applying solutions to these themes are paramount to the success of organizations who seek to understand the impact of diversity on competitive advantage. For the ideas in this chapter to be useful and beneficial to organizations, organization leaders must commit to developing their DQ and leveraging all the talent that their diverse and non-diverse employees bring to the organization.

To be competitive organizations must develop diversity competencies and understand that all plans may not be doable within the current constraints. For example, many studies have suggested that women need other women to mentor them in STEM fields; however, they tend to overlook the history of women in STEM. Understanding of the history of women in STEM is needed to prevent authors from suggesting this unviable solution (Hughes, 2016b). Very few women can mentor women in STEM because historically, women were not allowed to pursue degrees in these fields. Older women can provide encouragement, but they do not have a frame of reference for what younger women are experiencing since they have not had the experience.

Dr. Martin Luther King, Jr. stated that "an unjust law is no law at all" and an unjust system is no system at all. Without a system that supports a just culture, an organization will defeat its strategy for success. Stiglitz (2012) suggested that there is a price of inequality and that price can be detrimental to society and organizations. Society is not only divided economically but also racially and ethnically. All individuals must be accepted for who they are, but not necessarily for what they do if it does not align with the organization's goals. Organization leaders have a choice and they need to choose to do the right thing for their protected class employees to sustain their competitive advantages in the global economy and the Fourth Industrial Revolution.

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KEY TERMS AND DEFINITIONS

Career Advancement: The ability to move to a higher job within the career management plan of the employee.

Career Change: Movement from one career field to a different career field.

Competitive Advantage: Characteristics of the organization that distinguishes it from its competitive peers.

Diversity of Thought: A thought that is different than the norm or status quo. Uniquely different way of viewing a situation or presenting an idea.

Strategic Plan: Plan developed by organization leaders to achieve organizational strategy to achieve goals.

Talent Development: Development of employees within the organizations. Suggests that all employees have talent that can be developed to benefit both the individual and the organization.

Talent Management: Ability to align talented employees within the strategic goals of the organization so that they produce results desired of the organization.

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Chapter 41
Sustaining and Retaining the Diversity Practitioner

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ABSTRACT

The purpose of this chapter is to examine the ways in which an organization or an institution can utilize a diversity practitioner for success. This chapter explores the culture of the organization and what the senior management needs to be mindful of in the hiring process and beyond. The chapter then investigates the practices that should be carried out by the organization that will prompt a practitioner for success. It explores the considerations as the practitioner works in the organization on establishing a quality work environment. With a visible commitment and support of the individual and the expected outcomes, the practitioner will be a critical part of the organization's success. Organizations have to be strategic and intentional about implementing measures to assure the diversity practitioner has the tools they need. The organization has a responsibility to recognize the emotional toll and additional stress of being in the diversity practitioner role. Clear expectations and strategies are offered.

INTRODUCTION

Many establishments, institutions, and organizations have thought deeply and strategically about the hiring process in search of someone to champion areas of DEI (diversity, equity, and inclusion). A job description has usually been thoroughly crafted to recruit a knowledgeable individual with the education, training, and experience necessary to excel in the position. Leadership has already had conversations as to why and how this role will meet the organization's needs. There may be an unspoken assumption regarding how difficult this job will be. The leadership of the organization understands that the diversity practitioner will experience an emotional toll, yet it is unlikely that measures are put into place to cope with this extra burden. Because the diversity professional is in a leadership position, the authority of that position needs to be assessed. The management of the organization may wish to examine the importance and effectiveness of symbolic representation at the elected or senior decision-making administrative level for this position (Murray, 2017). Multiple voices within the organization have been incorporated into the

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hiring process to successfully identify a candidate who is reflective of the institution's values, mission, and philosophy. The offer is made and accepted and the diversity practitioner is employed. Now what?

An organization that seeks a diversity practitioner, one who is charged with creating a more equitable work environment, is more than likely to communicate intentionally in their marketing, advertising, website, brochure, and other promotional materials that they value diversity. The hiring of a diversity professional itself may lack genuineness as the institution strives to communicate a value in diversity (Griffin, Hart, Worthington, Belay, & Yeung, 2019). Sometimes their effort to communicate the importance of diversity manifests through the photos that appear in the marketing materials, with blended groups of people by both ethnicity and gender. As prospective employees research the organization, they may make assumptions about the working conditions and the perceived favorability surrounding diversity (Windscheid, Bowes-Sperry, Jens-Mazei, & Morner, 2017). This perception may be real, but it may also be artificial.

The purpose of this chapter is two-fold. First, it examines the ways in which an institution and its leadership can set up a diversity practitioner for success. The employer may have thought about the impact to the organization once the practitioner is in place, but may not have considered what measures need to be in place in order for this to happen. Depending on the circumstances surrounding the hiring of a diversity practitioner, the development of the role may or may not be fully researched and developed. What systems and mechanisms need to be in place to support the work and the role? This chapter explores these necessary components.

Second, this chapter focuses on the practitioner's overall well-being. How is the person in this role sustained? There is usually a high level of emotional distress associated with this role, particularly from people with marginalized social identities and members of underrepresented groups in predominantly White institutions, and additional responsibilities and expectations typically exist outside of the job description. The diversity practitioner may be sought out for any aspect of the workplace that involves marginalized groups. He/she may also be utilized for oral and written communication, conflict resolution, human resource policies and procedures, and overall support for people of color. He/she will probably be expected to be a spokesperson of sorts to speak on behalf of the organization. The diversity practitioner is a public relations representative to help uplift the organization's reputation.

The role of the diversity professional involves many tasks and responsibilities. Part of the role is to problem-solve, respond to conflict, and provide resolution in sometimes contentious situations. Often times, the limited number of employees in underrepresented groups positions the employee to be overburdened in carrying the psychological weight of all people of color. Unfair professional standards can also place an emotional toll (Steele, 2018). This chapter communicates the steps the institution should take in developing culturally proficient employees and ways the institution will be held accountable. It is important for the employer to retain consistency in the retention of a successful practitioner. The building of relationships and the establishment of trust requires time. If the practitioner leaves the position, a new practitioner may need to start from square one and begin the work all over again. It is to the institution's advantage to retain an effective diversity practitioner. Those who do diversity work are undervalued (Ahmed, 2012); they rarely receive a trophy, a banner, or other sign of achievement. It is thankless work. Nonetheless, if the practitioner is not sustained in the work, the practitioner will be exhausted and unfulfilled. He/she will not thrive, nor will he/she achieve the results needed. Often times, people in this role have a personal connection to DEI. They have either experienced a lack of equitable circumstances for their own identification in a marginalized group, or they have recognized they have benefitted from a level of privilege their own identity and experience has brought them (Wilson, 2013).

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However, as this chapter addresses the role of the diversity practitioner, it often reverts to the implication that the diversity practitioner is a member of a marginalized group.

Where Do We Begin?

After employing the new person, the first critical step is for all stakeholders to understand the role of the diversity practitioner. Responsibility lies with the executive leadership to also understand their responsibility in the overall effectiveness of the position.

Organizations can minimize miscommunication with diverse others and build relationships with diverse others by implementing the following strategies, that is, by communicating effectively, working with diverse others, encouraging peers to be open in discussing their personal opinions, and educating employees about differences. These strategies will increase awareness about workplace diversity. (Patrick & Kumar, 2010, pp. 5-6)

The institution should communicate these strategies as methods to make the organization better.

Some diversity positions are created proactively. The organization has a vision and creates the role after examining its needs, coming to the realization that an individual is needed to provide a consistent DEI lens to be sure the best decisions are made. The position is then designed to meet the ongoing and future needs of the organization. The leadership must provide clear communication to the employees to decrease resistance in developing a commitment to DEI in the workplace. In order for people to believe in the effectiveness of diversity measures, they will need a positive attitude. Stakeholders have to believe that diversity initiatives will yield positive results (Windscheid et al., 2017). If the organization is able to make efforts for stakeholders to have faith and trust in the organization, efforts should also be made to have faith and trust in diversity initiatives. Stakeholders have to believe in the value, need, and effectiveness of diversity.

In contrast, diversity positions can also be created as a reaction to circumstances and/or events. An incident occurs that violates a component of identity that results in harm being done, a collision of culture. An action is then taken to address the damage that has occurred. The creation of a diversity practitioner role is part of the perceived solution for this error. Organizational leaders often put diversity practitioners in unfair positions, expecting them to repair injustices that happened in the past rather than creating equity for the future (Ahmed, 2012). For example, in the educational sphere, rise in Chief Diversity Officer (CDO; diversity practitioner) positions in educational institutions is often in response to a significant campus incident. Regardless of the organizational setting or field, it is often assumed that hiring a diversity practitioner will resolve any conflicts or fix any situation where inequity and exclusion have occurred. Rather than undertaking a joint effort by all employees to respond, responsibility is placed on one individual. The organization has most likely not put enough consideration in the implementation of the role in regard to the injury to the community, the hurting within the community, and the healing that needs to take place (Griffin et al., 2019).

The lack of thoughtfulness in the design of the diversity practitioner role is evidenced in frequent news articles describing how, in acts of desperation, major corporations have mandated cultural competency training in an effort to repair acts of racism and other damage to people's identities. For example, in 2018, Starbucks closed over 8,000 stores for racial anti-bias training after an incident in which a Starbucks manager called the police when two Black men were waiting to have a meeting without placing

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an order. Police arrived and arrested the men. News and social media outlets created national outrage with a video of the men being carried out in handcuffs. Starbucks' 4-hour training that examined bias and stereotypes with 175,000 employees was a response to this incident (Picchi, 2018). In 2018, a Black toddler boy modeled for H&M wearing a green sweatshirt that read, "COOLEST MONKEY IN THE JUNGLE" (Bjerre, 2018, para. 1). The retail giant issued an apology for its insensitivity. In 2017, Pepsi pulled its commercial that showed model Kendall Jenner hand a Pepsi to a police officer at a protest and the crowd cheering with glee. Dove and Nivea (skincare product lines) both removed commercials that featured Black women that messaged lighter, fairer skin as better and more desirable. Gucci's 2018 fashion collection featured predominantly White models wearing turbans (symbolic of religious beliefs) as a fashion accessory. Prada agreed to hire a diversity officer, diversify its workforce and employ racial sensitivity training after figurines in their Soho store window in 2018 were deemed racist and likened to blackface (Ly, 2018).

There are countless examples of universities that hired a CDO after racist incidents in the last 5 years, including but not limited to: University of Oklahoma, University of Michigan, Eastern Michigan University, Syracuse University, and University of Missouri (Parker, 2015). With regard to these incidents and many more, where is the diversity lens and why has it failed? More organizations are seeing the need for someone to champion initiatives in the workplace where people are being treated with equity and valued for who they are. The demand for diversity practitioners shot up 23% in 2019 in the United States and the trend is expected to continue (Gilchrist, 2020). Some organizations and corporations have diversity training included in their regular onboarding and training of employees, whereas others wait until their clientele and/or product have been damaged.

Preparing for Resistance

The creation of a diversity practitioner position can cause problems for employees who do not support the idea of or believe in the need to have one. Wilson (2013) explained that a CDO has a great responsibility and complex challenge to enact change. A CDO's work may be met with threats to effectiveness, including the fact that community members may be unwilling to adhere with the policies, programs, and initiatives that the CDO develops. Wilson stated that:

a backlash over the need for a CDO can result in members of the community becoming hostile to the individual attempts to break down barriers causing obstacles for those within the institution. Resistance can occur because of the perception that little, if any, problems related to diversity exist at the institution; therefore, a CDO, let alone any new diversity policy, is unnecessary. (p. 433)

The organization must commit to ongoing multicultural or diversity training for all of its employees; one-time trainings are simply not effective. Although the evaluation of such trainings can be positive, the behaviors following the intervention are not indicative of change. However, such limited trainings would be more effective if employees received communication and data as to how and why such trainings are necessary and valuable. It is important to establish a tone and climate that is supportive of the diversity practitioner role and the training. There is a correlation between the trainee's readiness for the training and the outcomes of the training. The learning that takes place and the employees' belief in its utility will be increased if trainees are motivated and receptive. A trainee's belief that he/she will be able to use the material learned and that the training is valuable will prepare him/her to be more receptive

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and be engaged. How the skills and content to be developed in diversity training will be used must be communicated to the trainees before the training takes place.

One goal of diversity training is to decrease barriers between coworkers and improve employee relations. The majority of diversity practitioners are people of color, women, or both. Their personal experience in having a targeted identity fuels their passion for equity and justice. Facing inequity related to more than one identity (i.e., the intersectionality of gender and race) sets the stage for multiple ways to understand and respond to such injustices. Employees of targeted identities who experience marginalization and oppression see diversity training as a necessary component of their work. The organization must be purposeful in communicating the importance of having a diversity practitioner to all its employees, but particularly members of the dominant culture. Employees who have experienced acts of discrimination against them are more likely to be open to the training (Chung, Gully, & Lovelace, 2017) because they have experienced injustice.

Welcome to Diversity Work

The groundwork laid before the diversity practitioner begins is essential. Specific steps need to be put into place to lay out a welcome. All constituents should be informed of the practitioner's qualifications and cite specific ways in which his/her expertise and experience will complement and enhance the work in progress. Before the practitioner even begins, organizations must have a plan in place that will set up the practitioner for success. Each employee should be able to effectively answer the question, "What does the practitioner do?"

It is necessary to trust the competence of the diversity practitioner and demonstrate that trust from the beginning. The leadership and/or management must invite this new role into key areas of decision-making. The leadership must also assist in the diversity practitioner's discovery of where and with whom to partner and collaborate. The organization must provide a seat at the table for the diversity practitioner with the Board, CEO, President, Head of School, and any other necessary senior leadership or decision makers. The organization should understand that although DEI is included in the description for the role of the practitioner, DEI is every employee's job. Diversity will not advance without the active support of the leadership, and diversity practices that help to establish a positive, healthy and productive workforce will not be instituted if the senior management (CEO, Head of School, President, or other figure of authority) is not committed to achieving these goals.

A CEO's words and actions matter in setting the stage for the implementation of diversity initiatives, but their HR managers' interpretation of these words and actions also plays an integral role in determining whether diversity management practices are in fact implemented. (Ng & Sears, 2018, p. 10)

If the institution as a whole perceives the senior management's commitment as lacking, there will be a ripple effect in the practitioner's ability to employ diversity initiatives (Ng & Sears, 2018). Who are the allies and the support team? The alliances developed between the diversity practitioner and other key stakeholders help to mobilize inclusive excellence. It is unlikely that diversity and inclusion efforts can be advanced and organizational change can occur without the fostering of coalitions and buy-in of key stakeholders (Griffin et al., 2019). The leadership has to model partnership and what a support team looks like. The leadership can consider the following questions when evaluating their ability to do this:

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- How can I leverage my position and organizational knowledge to benefit others?
- How can I support and promote the agenda of underrepresented groups rather than promote my own agenda?
- How can I be a better listener and maintain the posture of a humble learner?
- How can I consciously de-center myself in my work as a partner to ensure others are centered?

The organization must be intentional about employees' development of cultural intelligence. Earley and Mosakowski (as cited in Slusher, 2005) defined cultural intelligence (CQ) as:

an important aptitude and skill that managers need and use in understanding corporate cultures and subcultures. Someone with high cultural intelligence discerns the defining features of a person or group's behavior. Both cultural intelligence and emotional intelligence share the characteristic of being able to suspend judgment and to think first before taking action. (p. 250)

Individuals can achieve CI through remaining alert, motivated, and poised.

CQ includes cultural knowledge, cultural skills, and cultural metacognition (Thomas et al., 2015. Content knowledge is knowing about one's self and the nature of others in order to successfully navigate different cultures. Cultural skills are relational skills required to exhibit behavior that relates and adapts to different people with different lifestyles, identities, and experiences. Cultural metacognition is the awareness of how one thinks and the biases one holds, as well as having control over one's mind in order to deliberately monitor and regulate one's thinking (Thomas et al., 2015).

Be Responsible

It is the employer's responsibility to examine the institutional norms that offer nuanced social and professional collateral and exclude others from opportunities to gain success. The conscious and unconscious thinking and behavior that has been established prior to the practitioner's onboarding must be reexamined. The practitioner may regularly experience microaggressions and may often need to code-switch in order to adapt to the environment's cultural norms. Code switching is a strategy used by members of the minority identity group to navigate in the dominant culture where certain cultural norms and behaviors are expected. This can be any aspect of culture—including style of dress, hairstyle, language, and other observable behaviors—used to assimilate when necessary; when in a different context, the person can simply switch back. For example, if proper English is the primary language in one's workplace, employees utilize traditional English as they write, speak, and communicate with other nuances (body language, facial expressions, etc.). The same employee may deviate from this standard English when he/she communicates away from the workplace. The employee may adapt their style of language to talk to family members, friends, and others of their shared background.

Hopkins (2010) noted that:

the tendency to adopt the worldview values of the dominant culture, especially by white consultants can be a significant inhibitor in driving change. Biases are embedded in each and every one of us as well as organizational practices, policies and structures. (p. 167)

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Hopkins asserted that practitioners must have courage to face themselves and their own forms of resistance; with this courage, practitioners can face inequities and dismantle structure from within the systems themselves. The employer must employ intentional strategies to maintain a quality work experience. Recommended strategies to employ for a quality work experience are included in the next section.

Affinity Groups

In employee resource groups (ERGs), where institutional norms can be discussed, as well as how they align or misalign with one's own value systems and cultural norms. The corporate culture and inherent expectations can be shared and discussions can be held regarding the norms of the institution (Green, 2018). Such affinity groups have the potential to promote self-reflection, create support networks and promote empathy in a historical and cultural context. Steusse, Staats, and Grant-Thomas (2017) stated that "Affinity group work aids participants in coming to terms with stereotypes and discomforts in a 'safe' space and establishing a set of shared values and goals before coming together with others" (p. 255). Their research findings revealed that affinity groups inspired self-reflection, encouraged empathy, and facilitated participants' ability to see another group's humanity.

What resources are available for the employee to be in a productive space with others who share aspects of their identity? Perhaps an ERG and/or a consortium with other diversity practitioners. This space is designed to nourish participants, offering respite from the pressure that the daily tasks of the position put on the individual. Affinity groups create a place of mutual support, offering the opportunity to process incidents that take place. Members of an affinity group can experience aligned positive and negative experiences that can encourage an open, respectful dialogue that is more likely to be free of retribution from those without a shared identity (Tauriac, Kim, Sarinana, Tawa, & Kahn, 2013). Personal connections can be fostered in affinity groups and create a sense of belonging. When members of a shared identity have the opportunity to be appreciated as a group, they can increase their sense of belonging and feel appreciated as individuals. Members of the affinity group will feel less compelled to conform to the norms of the dominant culture if they are recognized and valued in their group identity (Mitchell et al., 2015). In the affinity group, members can not only support each other's experiences, but also help one another by sharing strategies that enable them to navigate the institution successfully (Steele, 2018). This works in favor of the institution to be more effective in their DEI goals.

The employer must communicate openly that the affinity spaces are in alignment with the institution's values while openly encouraging their existence. Formalized support from the organization includes making resources available. ERGs based on social identity factors not only increase job satisfaction, but also contribute to decreased absenteeism and a greater sense of connectedness to the organization. The results of ERGs include increased retention and an overall more inclusive environment. They serve as a natural onboarding for new employees and offer coaching from veterans. Members of the groups can discuss overall DEI in their workplace, as well as how to advance these measures. Participants in ERGs have reported greater job satisfaction and a deeper understanding of how the organization functions. Another outcome of ERGs is the opportunity for managers and organizational leadership to better understand the employee experience, and contribute institutional change. ERGs give voice to underrepresented groups, which can lead to positive institutional change (Green, 2018).

The affinity space will also decrease the frequent isolation and loneliness that can occur when in this role. Employees of color in predominantly White institutions can experience a lack of respect and isolation. Isolation comes with feeling invisible to the majority, or visible only to those who share a

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common identity. The experience of not being valued, acknowledged, or appreciated also contributes to the invisibility felt by diversity practitioners in this role (Steele, 2018).

Professional Growth and Development

As the diversity practitioner position grows, the practitioner's needs will most likely expand. A plan should be developed early on as to how the practitioner will be able to meet the growing needs of an institution, which may occur through the institution's expansion. If it is a new role, the employees of the organization will have a growing familiarity with how the role complements various departments and initiatives. There will be an increased understanding of what the role is logistically, not just theoretically. This increase in familiarity and understanding will require more time and an increased commitment by the practitioner. Is the plan to expand the team? If so, what does that look like? If the plan is not to expand the team, what is the plan to support the current structure? When the practitioner is hired, ample resources must be available, including staffing and space. Historically, the diversity practitioner role has meant one person who participates in strategic hiring. This role has evolved to one that is multi-dimensional to include representatives that provide a lens of diversity and inclusion in all facets of the organization, including hiring and retention (Gilchrist, 2020). Diversity in the workforce can potentially benefit the organization in economic terms, but it does require a significant amount of resource investment (time and money) before the benefits of workforce diversity materialize (Ng & Sears, 2018).

Another critical component of success is the diversity practitioner's authority to make executive-level decisions and he/she reports to the highest level of administration. The likelihood that an institution will believe in the practitioner's ability to make change and be a person of influence is higher when the practitioner reports directly to the person with the most influence (Wilson, 2013). In corporations, this is often the President or CEO. In educational institutions, this is the President, Provost, or Head of the School.

Support DEI Growth

Institutions often expect more and more from the diversity practitioner without proper and ongoing training to increase and refine his/her skillset. The practitioner needs ongoing identity development. Identity development is integral to DEI work. One's own identity gives him/her an understanding of his/her own otherness. Understanding one's own difference will shape behavior, perception, and understanding. Identity development is not only important for how one sees oneself, but also how he/she engages with others (Holck, Muhr, & Villesèche, 2016). Self-awareness and personal development are critical to the practitioner's success. A practitioner's lack of skill and personal awareness are major reasons why diversity initiatives fail. Diversity practitioners must possess cultural competency, cultural humility, and emotional intelligence. There is a constant need to read, study, and have ongoing learning experiences (Hopkins, 2010).

Additionally, administration must demonstrate ongoing commitment for the practitioner to attend workshops, conferences, speaking engagements, and retreats that focus on diversity, multiculturalism, social justice, anti-bias, and equity. One way that institutions can prioritize this role is to have substantial professional development and travel funds available. If such funding is not available, DEI is not a priority, because where the institution allocates its funding demonstrates its priorities. Such conferences are how the people in these roles build community and receive professional guidance from others. With an office of one or two people, the building of professional networks is essential for problem-solving,

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community building, and expanding the diversity practitioner's role, enabling the representative from the institution to gage the job duties in his/her own work situation and get a sense of how it compares to others' responsibilities. Such professional networking increases the diversity professional's competency and potential efficacy.

Performance Goals

The organization's leader should examine future goals with the practitioner. Is there an opportunity to grow professionally? The practitioner role can expand in its leadership capacity to complement an institution even further. The diversity practitioner's outcomes cannot be the same as the outcomes for the institution as a whole. Diversity practitioners as leaders in management and administration is a relatively new and growing concept. As the goals are set with the practitioner and their supervisor, there should be specificity in goal setting that acknowledges the achievements the diversity practitioner has made. The practitioner's supervisor should highlight the successes that are both individual and institutional.

The weight of an institutional goal should not rely on one individual. Unlike other positions, the diversity practitioner's work is to contribute to a shift in culture. As the practitioner works toward individual goals, there will be ramifications observable to the institution at large. The individual and institutional goals should be acknowledged, but the institutional goals should not be expected to be accomplished alone. A direct threat to the success of a practitioner is bearing the burden of all diversity initiatives. Instead, diversity expectations must be set and included in all departments (Wilson, 2013).

True diversity planning can take place only when diversity is included in the strategic plan, which outlines and focuses on the priorities of an institution. If diversity is important, it will be included in this plan. The plan must not just mention diversity, but rather must purposefully incorporate diversity (Wilson, 2015). Rather than a vague mention of a focus on or a commitment to diversity, the plan will be specific as to how the organization will accomplish this.

Institutional Change

Institutional practices in regard to diversity and inclusion must be in line with the institution's stated values. The diversity practitioner is not the highest level in the hierarchy and therefore is unable to make unilateral decisions that result in significant organizational change; however, the practitioner can successfully navigate the necessary relationships with those in the highest leadership positions to partner together in instituting change. The practitioner's credibility with the organization's leadership contributes to their ability to convince or influence incremental change that aligns with institutionally-espoused values (Griffin et al., 2019). Senior management's documentation of diversity values and initiatives is important, but management's behaviors have the most influence. Leadership must demonstrate pro-diversity behaviors in order for diversity initiatives and practices to take place (Ng & Sears, 2018). As the practitioner commits to diversity development, the organization's leadership must not only articulate their support, but also demonstrate their support.

Mentorship

The benefits of mentorship are plentiful, and are necessary in the role of navigating DEI. For minority and female diversity practitioners, a mentor can serve as a role model for relationships and career

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advancement. Female mentees are more likely to desire a female mentor and mentees of color are more likely to desire a mentor of color (Bailey, Voiles, Finkelstein, & Matarazzo, 2016). The practitioner needs opportunities to observe the behavior and nuances of a successful leader, whether in their own organization or an outside organization. The organization should provide the opportunity to check in with the mentor. The organization should also support opportunities to connect and inquire about those connections. What is the mentee learning? How is the mentor supporting the work? The manager-employee relationship is critical for retention. The relationship between the supervisor and the practitioner must go beyond performance review.

Job Satisfaction

The longer a person experiences job satisfaction, the longer he/she may stay in his/her role. A healthy work environment contributes to creative, quality-oriented, productive employees. One of the best ways of promoting job satisfaction is offering opportunities for advancement (Laddha, Singh, Gabbad, & Gidwani, 2012). Team members that believe the diversity of the team is respected and embraced in various perspectives, ideas, and opinions are more likely to experience increased success. Leader inclusiveness focuses on the value of the team members' contributions and acknowledges the team's diversity. According to Mitchell et al. (2015), "Inclusive leaders also enhance interprofessional team performance by building team identification. By assuring members that their individual contribution is valued, inclusive leaders facilitate the development of team belonging and the existence of strong, stable team relationships" (pp. 222-223).

People of color may experience a lower level of comfort and less access than their White counterparts in discussions with their immediate supervisors (Steele, 2018). If an employee is not satisfied, he/she will be difficult to retain. The loss of an employee can also lead to considerable financial loss because the organization must then identify new talent. Community diversity shapes an employee's intent to stay with his/her employer. An environment that is supportive of diversity is important for people of color as well as their White counterparts. Employees who believe their organization is supportive of diversity and that they can live and work with dignity are more likely to have positive experiences and believe in the organization's ethical stance. Employees who are engaged in diversity work are more likely to contribute to favorable work conditions if the organization has been intentional about creating a positive diversity climate, which is an essential component of retention. Diversity climate is defined as "the extent to which an individual perceives his or her geographical community values diversity and is acceptable of racial and ethnic differences" (Singh & Selvarajan, 2012, p. 260). Other components of diversity climate include work conditions free of harassment and discrimination, equity among employees, diversity in the workforce, and perceived value of diversity in the institution's decision-making (Buttner, Lowe, & Billings-Harris, 2012).

The organization needs to take proactive steps to determining job satisfaction. A retention survey or audit can be used to not only recognize and acknowledge the practitioner's work, but also determine if the right mechanisms are in place to support the work being done (Buttner et al, 2012). The audit will allow the employer to have clarity on the factors that contribute to job satisfaction as well as those that detract from job satisfaction. A diversity climate scale measures the employees' level of satisfaction with the employer and factors important to retention. According to Buttner (2012), a climate scale should measure three different levels of satisfaction: organizational fairness, organizational inclusion, and fulfillment of organizational diversity promises. Organizational fairness measures how an individual is

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treated in comparison to others in his/her workplace. Areas to include in the fairness section relate to the institution's decision-making, promoting, evaluation, and access to opportunities. Employees' perception as to what is fair is important. Organizational inclusion describes the evaluation of the organization to implement diversity training, defy traditional standards that favor advantaged groups, and support people of color in their identity. Diversity fulfillment includes support as an employee in their identity and how well the organization includes different perspectives. These areas (organizational fairness, organizational inclusion and fulfillment of diversity promises) are intertwined and meaningful in determining job satisfaction. The perceptions of the experience in regard to the diversity climate for people of color is critical to decisions made around DEI. Employees of color want to see action taken behind diversity initiatives, not unfulfilled institutional promises (Buttner et al, 2012). These areas should be surveyed in order to target areas of dissatisfaction.

Health and Well-Being

Diversity work is intensely personal. Culture plays a critical role in the practitioner's overall mental health. Institutions must consider the energy required to engage in cross-cultural exchanges and the toll of having a culturally acceptable response within an institution that may not accept or tolerate a response that is instinctual to the practitioner. For example, the nuances and norms of a predominantly White, refined, professional workplace in Western society may be very different from the life and culture of a practitioner who is a person of color. The person of color may need to respond to both overt and coverts acts of racism, stereotyping, and microaggressions which are burdensome and exhausting. Stigma and discrimination have a tremendous impact on mental health. Changing institutional culture can be extremely challenging (Griffin et al., 2019). Psychological responses to racism can manifest in physical symptoms and long-term conditions.

Some consequences of racism-related stress may include experiencing depression, headaches, anxiety, low self-esteem, humiliation, upset stomach, chest pains, tunnel vision, ulcers, back pains, nightmares, loss of appetite or overeating, nausea, shortness of breath, weeping, vomiting, fatigue, increased heart rate and hypertension, anger and frustration, difficulty concentrating, lack of productivity and motivation, sleep deprivation, and recounting specific racist situations days, weeks, months, and years after they occur as if they happened more recently. (Truong & Museus, 2012, p. 228)

Diversity practitioners may experience an intersection between their personal and professional identities while working to understand and tend to employees, students, or clients. Practitioners may personalize and internalize experiences due to their own life and family experiences. They may need to put these personal feelings aside in order to provide emotional support for other members of the community (Griffin et al., 2019). In response to activism on her campus, one CDO stated,

I felt like I could never get away from it [personal concerns and connections to activism]. I never had an outlet. And then I show up to my new job, and then I also need to be a resource to students and even some staff. So of course when you show up to work, like you know, you have to be present. You have to be there, and you have to be engaging, and there is not a lot a room to shift like your own things and your own feelings, but you sort of have to do that at times to be there for students. (Griffin et al., 2019, p. 682)

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People of color are less likely than their White counterparts to seek professional psychological services. Practitioners who may be subject to individual and institutional racism experience a level of mental strain. "Racism or racial discrimination experienced in society is consequential for those who experience it, as it can cause isolation and marginalisation, undermine trust, exacerbate trauma-related consequences (especially for refugees), undermine social capital and compromise access to essential services" (Gopalkrishnan & Babacan, 2015, p. 7). People of color and those from marginalized groups can also experience what research has shown about the immigrant experience. Pasca and Wagner (2011) explained that immigrant employees commonly experience discriminatory attitudes or negative reactions from native-born colleagues at their place of work. Furthermore, they explained,

These attitudes toward immigrants held by people in the host country affect immigrants' ability to adjust, secure employment, and integrate into the community. Immigrants' experience of discrimination and lack of social support in the workplace can lead to low self-esteem, fear, anger, loneliness, inability to cope, and psychological distress" (p. 2011)

Many factors contribute to stress in the workplace, but acts of discrimination and behavior by colleagues who are resistant to change in order to move forward in the areas of DEI are added dimensions. If seeing a mental health clinician is not an option, other measures can enable the practitioner to take care of himself/herself. Organizations should recommend, suggest, and provide services to assist with the stress of the position. Examples of services to provide and encourage include, but are not limited to: food and nutrition, fitness, transportation, massage therapy, social support, acknowledging life events and accomplishments, flexible hours, extended breaks in the day, a healthy outlet to talk, and personal days for mental health. Due to differences in culture and identity, social support can be enhanced when ongoing multicultural training is in place for all employees. Diversity training builds cross-cultural communication skills and increases understanding of self and identity. It builds the capacity to have healthy relationships with people who live and experience the world differently.

Those who seek social support from others may do it to ensure their well-being by gaining sympathy from people in their environment or to solicit an intervention from someone who can advocate for them and respond directly to the oppressor. (Truong & Museus, 2012, p. 230)

The practitioner will be less likely to stay at an institution if he/she lacks positive connections and relationships, especially with the immediate supervisor (Truong & Museus, 2012).

CONCLUSION

This chapter has outlined the measures to best prepare for, onboard, and maintain a diversity professional. The success of diversity practices is limited without the support of the institution's leadership. Throughout this chapter, research-based recommendations are made regarding how best to support the diversity officer. An important aspect of supporting the work comes down to being an ally. "Being a diversity and inclusion ally means to be willing to take action in support of another person so that any external barrier that could limit their opportunities in the workplace is removed" (Milanesi, 2020, para. 5). Being an ally may elicit some level of guilt because most White-identified people do not recognize

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their privileged identity. Guilt does not have to be the driving force for partnership, although it may be an important component in developing empathy for disadvantaged groups and the motivation behind becoming a partner (Grzdanka, Adler, & Blazer, 2015). The concept of being an advocate is rooted in support, but it does not come without complications.

Overall, the essence of advocacy has shifted from political, legal, and economic foci, to the use of social power on behalf of vulnerable others, to expectations that unearned social power can be deployed to dismantle systems of unearned advantaging. Similarly, the idea of allyship has shifted to express lateral rather than hierarchical 'helping' relationships, and to expectations that allyship is an ongoing real-time behavior rather than a static identity. (Anicha, Bilen-Green, & Burnett, 2018, p. 163)

The effective advocate goes beyond passive measures to stand with a stigmatized and/or oppressed group. An advocate positions himself/herself to stand with an underrepresented group, but can still return to the privileges he/she holds in everyday life (Grzdanka et al., 2015). Allyship is valuable when there is accountability. An effective ally will first listen intently and examine the messages of superiority and inferiority that create judgmental and harmful biases and stereotypes that shape actions and can interfere with understanding and supporting differences (Anicha et al., 2018). In order to best support the diversity professional, be an ally.

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Chapter 42
An Approach to Diversity and Cultural Competence Curriculum in Public Administration

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ABSTRACT

There are a variety of approaches that can be utilized to facilitate public administration students and practitioners using culturally responsive approaches in their professional lives. The importance of understanding cultural diversity extends not only to individual interactions but also the structure of organizations and organizational decision making. The chapter presents one approach to providing students with a diversity-focused curriculum in a graduate-level public administration program. This approach includes an overview of the historical legacy of diversity in public administration, legally required and voluntary approaches to organizational diversity, models that can be used to assess the diverse cultural experiences of individuals for more personalized practice, and activities that can be utilized and adapted to educate public administration students and practitioners on issues of diversity and cultural competency.

INTRODUCTION

By 2030, one in five Americans is projected to be 65 and over; by 2044, more than half of all Americans are projected to belong to a minority group (any group other than non-Hispanic White alone); and by 2060, nearly one in five of the nation's total population is projected to be foreign-born (Colby and Ortman, 2015). Given the current and future demographic changes that are taking place in the United States, it is imperative that public administration students and practitioners are equipped with the knowledge, skills, and abilities that will prepare them to interact with individuals from diverse backgrounds and address the needs of individuals and communities in ways that acknowledge differences across culture and identity. In spite of this, many Master of Public Administration programs do not include components

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in their curriculum that emphasize the various dimensions of diversity (Sabharwal, Hajal-Moghrabi, and Royster, 2014). Hewins-Maroney and Williamson (2007) find that although most public affairs and administration programs include some form of diversity within the curriculum, it is not standard across all programs. Also, when present the focus is often on socioeconomic class, race, ethnicity, and gender. Other topics like sexual orientation receive little to no attention (Ryan, 2012; Wyatt-Nichol and Antwi-Boasiako, 2008). In some instances, diversity in the curriculum is limited to a minimal part of a course rather than an entire course or courses (Wyatt-Nichol and Antwi-Boasiako, 2008).

There are a variety of approaches that can be utilized to facilitate students and practitioners engaging in culturally responsive approaches in their professional lives. The importance of understanding cultural diversity extends to not only individual interactions but also the structure of organizations and organizational decision-making. This chapter is intended to be a general overview for faculty who are considering explicitly framing instruction around matters of diversity in public administration or for students and practitioners who received minimal formal training on diversity. Although not the specific audience, individuals from a variety of academic orientations and professional backgrounds who want to facilitate conversations about diversity and inclusion in the classroom or workplace might also utilize the chapter as a way to think about diversity and apply, where appropriate, the content and activities discussed.

The information presented, was originally developed for the course, "Diversity in Public Life" which is offered in the Master of Public Administration program at Auburn University[1]. The course was designed to provide students with a broad understanding of diversity in public administration that can be applied to the curriculum that they encounter in other courses, which may not explicitly include components of diversity, and their professional lives. The course structure was rooted in the Carrizales (2010) framework of cultural competency for public affairs curriculum, which includes knowledge, attitude, skills, and community based cultural competency curriculum components.

The chapter, like the course, begins with a foundational overview of diversity in public administration, how it can be perceived, and it's evolution in public administration. The chapter then shifts to a presentation of involuntary and voluntary approaches to diversity in public administration, their advantages, and disadvantages. Next, three models of organization diversity and cultural competence are presented as practical ways to understand and evaluate the diversity and inclusion in bureaucracies. The chapter concludes with the presentation of a curricular approach that was utilized to connect the knowledge-based information about organizational approaches to diversity and models of organizational diversity to assignments and activities. Although intended for an academic setting to facilitate discussion about organizational diversity, cultural competence, identity and perception, these activities can be modified for use in a professional setting.

What is Diversity in Public Administration?

There are a variety of ways to define diversity. Sabharwal, Hajal-Moghrabi, and Royster (2014) suggest that in its simplest form, diversity is synonymous with the concepts of variation and heterogeneity (p. 209). Joshi and Roh (2009), who focus on diversity in work teams, define diversity as an aggregate construct that represents differences among members of an interdependent workgroup concerning a personal attribute. They focus on two dimensions of diversity in the workplace; relations oriented diversity and task-oriented diversity. Relations oriented diversity includes individual attributes such as gender, race/ethnicity, and age; characteristics that are in many ways visible and easy to characterize. Task-oriented diversity includes professional tenure, education, and function in an organization. A similar differen-

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tiation between the types of diversity is made by Heijes (2011) who differentiates between visible and invisible diversity. Visible diversity includes characteristics like gender, race, and physical attributes. Invisible diversity includes political opinion, ethnicity (when separate from race), social class, religion, regionalism, sexual orientation, and family history. Diversity has also been defined as, "otherness or those human qualities that are different from our own and outside groups to which we belong, yet present in other individuals and groups" (Loden and Rosener, 1991, p. 18). Although there is variation across definitions, the concept of diversity consistently addresses differences. In public administration, these differences can exist within the client population and between the client population and the population of public administrators, and within the population of public administrators.

The demographic differences between clients and public administrators have not gone unnoticed as an important component of public administration. Kingsley (1944), who advocated for a representative government workforce, argued that a representative body of administrators would help ensure responsible decision making by administrative professionals in public spaces who utilize discretion to make decisions. According to Kingsley (1944) for a bureaucracy to be truly democratic and understand citizen's desires, it needs to reflect the classes of citizens it serves. Although Kingsley (1944) primarily focused on socioeconomic class inclusion in bureaucracies, Mosher (1968) expanded notions of descriptive representation by incorporating race, gender, and ethnicity. Although research initially suggested the population of civil servants was representative of the American public, (Long 1952; Meier 1975), the research that has followed the original work on descriptive representation or representative bureaucracy has found that many sectors of the civil service do not reflect the demographic composition of the American public or client population served. Although it is not a requirement that the demographics of public administrators reflect the demographics of the public to advocate for the needs of clients or provide active representation, descriptive or passive representation or representative bureaucracy has benefits that go beyond advocacy. In bureaucracies, descriptive or symbolic representation contributes to minority citizens believing that they belong, are welcome, and their interests supported. As an example, Theobald and Haider-Markel (2009) investigate the relationship between descriptive representation in a local police force and citizen interactions. They find that when minority citizens encounter a minority officer, they view the actions of the officer as more legitimate than when encountering a non-minority officer.

Although representative bureaucracy can produce both symbolic (the perception that individuals like them are welcome in the organization) and substantive (policies and programs that benefit individuals like them) benefits for minority clients, representative bureaucracy is not without its criticisms. Because the sphere of administration lies within a democratic governance structure, Mosher (1968) expressed concern for what he referred to as, "active representation run rampant." Essentially, he feared the potential for minority interests to be given priority over what is in the best interest for the broader community, as a threat to democracy. Because of this concern, Mosher (1968) recommended bureaucratic agencies and bureaucrats put effort toward passive (descriptive) as opposed to active (substantive) representation. Although passive representation in bureaucracies may not produce the same substantive representation for minority groups, it holds symbolic value.

As organizations in the 20th century began to address descriptive representation and representative bureaucracy, multiple approaches to diversity in public organizations emerged. Although diversity can foster both active and passive representation, historically the primary motivation for policies focused on representation has been increasing the presence of passive or visible descriptive representation in public organizations most notably as it relates to race and gender.

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Approaches to Diversity in Public Administration

Many of the policies related to diversity in public organizations stem from federal interventions and policies aimed at preventing discrimination and ensuring that individuals have equal employment opportunities. These policies, more commonly known as Equal Employment Opportunity (EEO) policies, work to ensure the fair and equal treatment of all employees, irrespective of their race, ethnicity, religion, etc. (Gotis and Zortezi, 2015). These anti-discrimination policies slowly began to be adopted in the United States beginning in the mid-twentieth century. As an example, the Equal Pay Act of 1963 was passed to protect men and women who perform substantially equal work in the same place of employment from sex-based wage discrimination. Similarly, Title VII of the 1963 Civil Rights Act prohibits employment discrimination based on race, color, religion, sex, or national origin.

Following this, subsequent pieces of legislation were passed to protect individuals who may face discrimination. Examples include age (the Age Discrimination in Employment Act of 1967) and disability (Section 501 of the Rehabilitation Act of 1973; Title I of the Americans with Disabilities of 1990). Gotis and Zortezi (2015) suggest that EEO policies can be described as a color-blind approach to employment because they require that employers not treat individuals differently, but instead focus solely on their qualifications for employment. EEO policies then, although legally imposed, do not require organizations to actively engage in efforts to increase diversity in an organization.

Unlike EEO policies, affirmative action policies, work to create a more inclusive workplace by increasing the numerical representation of historically underrepresented groups in the workplace (Gotis and Zortezi, 2015). Affirmative action policies typically have very specific objectives. Such objectives might be to increase the number of racial/ethnic minorities employed or to increase the number of racial/ethnic minorities and women that hold positions in senior management. Examples of affirmative action policies include Executive Order 11246 (1965) which requires affirmative action programs for women and minorities and prohibits job discrimination based on race, color, religion, sex, and national origin, Section 402 of the 1974 Veterans Readjustment Act which requires affirmative action to employ and advance the employment of qualified special disabled veterans and veterans of the Vietnam era and prohibits discrimination based on Vietnam-era veteran status or special disabled veteran status in federally assisted programs, and Section 503 of the 1973 Rehabilitation Act which requires affirmative action to employ and advance in employment, qualified individuals with disabilities and prohibits discrimination based on disability in federally assisted programs. Given the nature of affirmative action policies, one might argue that the focus is on fairness, as the policies work to address historical injustices that have produced disparities in employment and professional advancement for marginalized groups.

Both EEO and affirmative action policies are mandatory as they are legally imposed and are accompanied by consequences if organizations fail to comply (Kossek and Pichler 2006). This approach creates an environment in which the normative justice the policies are aimed at creating can result in backlash. Members of the "historically dominant group may perceive the recruitment and promotion of employees by demographic attributes, as a potential threat" (Gotsis and Kortezi, 2015, p. 15). EEO and affirmative action policies also receive criticism because of their punitive and reactive nature and their potential for creating a "gender, cultural, and color-blind" (Gotsis and Kortezi, 2015, pl 15) workplace that focuses more on the assimilation of diverse employees into the dominant cultural orientation of an organization (Thomas 1990; Prasad, Pringle, Konrad, 2006) as opposed to the environment adapting to be more inclusive of the perspectives of minority employees. The assimilation of differences can have negative consequences for employees. While one might expect color-blind approaches to have the best

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outcomes for minority employees, research suggests that this is not the case. As one study demonstrated, the more white employees in a department, who thought colorblindness was the best approach to diversity, the worse the experience was for minority employees. In such departments, minority employees thought their workplace had more racial bias. By contrast, the more white employees who thought that an approach that celebrates group differences (often referred to multiculturalism) was the best approach, the less minority employees saw racial bias in their workplace (Social Psych Online, 2017). Lastly, EEO and affirmative action policies are criticized for primarily focusing on recruitment and not retention or professional upward mobility and promotion. Thomas (1990) argues that such policies serve as a professional boarding pass, not as an upgrade which addresses the problems of employees being able to meet their full professional potential and breaking the glass ceiling that prohibits promotion.

In spite of the challenges that accompany EEO and affirmative action policies, Dickens (1999) argues that the benefits of such policies should not be underestimated. He argues that they set an equality agenda for employers, determine the conditions under which employers' decisions are made, provide a universal standard regarding the management of a diverse workforce, and alter the cost of discrimination and organization inaction regarding equity and equality issues.

Contrary to EEO and affirmative action which are involuntary, diversity management policies are voluntary and typically designed to recognize, value and utilize differences and generate a process of inclusion for employees from different backgrounds through organizational policies and initiatives (Liff, 1997). These policies are typically advocated in the pursuit of full and equitable treatment of workers, regardless of their race, gender, and ethnicity (Soni 2000). Where EEO and affirmative action focus on addressing discrimination, diversity management focuses on difference and inclusion (Prasad et al. 2006); treating diversity as an organizational resource (Noon 2007). Diversity management has several goals: to understand cultural differences, recognize the importance of diversity, prevent discrimination against disadvantaged groups, encourage cultural interactions across race and gender, and enhance cultural development and leadership practices in the organization.

Organizations often choose to engage in diversity management to succeed in competitive professional environments and attract a diverse workforce (Soni 2000). Thus, the justification for diversity management approaches is often rooted in "connecting diversity to organizational performance. Metrics of performance can include meeting the needs of a diverse customer base, enhancing labor relations, responding to the needs of global markets, securing an increased market share, and improved workforce skills" (Gotis and Zortezi, 2015, p. 17). Although diversity management goes beyond the legal requirements of EEO and affirmative action, there are limitations to the approach. First, because the approach focuses on the practical benefits of diversity, it fails to address how structural discrimination has impacted historically disadvantaged groups and challenge or alter power relations; essentially rejecting the moral arguments for diversity in organizations. Second, it reduces diversity to a commodity, or resource subject to a cost-benefit calculus (Gotsis and Kortezi, 2013). For example, if at some point, an organization deems diversity a resource that is not contributing to the goals of the organization, it may choose to stop engaging in diversity management. Lastly, some argue that there is a lack of evidence to support the relationship between diversity management and measurable organizational outcomes (Gotsis and Kortezi, 2013). Recent research, however, suggests that diversity management is positively associated with perceptions of organizational fairness.

Utilizing data from the 2013 Federal Employee Viewpoint Survey, Kim and Park (2017) assess the relationship between diversity management and perceived organizational fairness. They find that generally, diversity management increases the perception of organizational fairness. Ethnic minorities and

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employees over age 40 are more likely to perceive diversity management as being positively associated with fairness. Women and employees at a higher pay grade are more likely to perceive diversity management as negatively effecting fairness. Although diversity management may not necessarily result in perceptions of fairness that are consistent across all demographic employee groups, it does generate positive organization perceptions for some employee groups, both which are covered by federal EEO and affirmative action policies.

Various factors can motivate the type of diversity approach that occurs in an organization. Understanding the justification, source, nature, and level of implementation for the approach provides a framework to understand what the consequences of each approach might be for the organization, employees, and clients. Each of these approaches lends itself to different orientations toward diversity in the workplace and the way that individuals and their role or place in the organization are perceived (Table 1).

Table 1. Comparison of approaches to workforce diversity

Initiative/Practices	Justification	Source	Nature-content	Level of Implementation
EEO and Affirmative Action	Moral arguments	Legally imposed	Focus on discrimination and justice	Focus on the group-level
Diversity Management	Business arguments	Voluntary	Focus on differences as an asset	Focus on the individual level

Source: Gotis and Zortezi (2015)

Cultural Competency in Public Administration

While traditional human resource courses can prepare public administration students for the legal requirements of diversity in public administration and organizations based on Equal Employment Opportunity and affirmative action policies, the focus of diversity in public administration has shifted toward a focus on cultural competency.

Cultural competency reflects specific actions or policies within an organization that enable it to more effectively serve a culturally diverse population (Carrizales, 2010, p. 594). The National Center for Cultural Competence defines cultural competency as, "having the knowledge, skills, and values to work effectively with diverse populations and to adopt institutional policies and professional practices to meet the unique needs of client populations" (Satterwhite and Teng, 2007, p. 2). Bailey (2015) suggests that the changing demographics of the nation underscore the need to train more culturally competent public servants. The change will require public organizations to develop more inclusive work cultures that have a better understanding of how people are different from each other and the organization (White and Rice, 2015, p. 3). Although other sectors in higher education (health care—medical and nursing education, and social work) have actively worked to integrate cultural competency into the curriculum, similar strides have not been made in public administration and public affairs. While the connection between cultural competency in health care and social work may be easy to recognize as both have a considerable number of professionals who regularly engage various demographic segments of the public in face to face service delivery, the connection to public administration may not be as evident. Rice (2007) presents several reasons that public administration needs to embrace cultural competency. Cultural competency recognizes the cultural context in which public encounters occur, presents an opportunity to address the

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often inaccurate public service and programs provided to minority populations, and increases the relevance of a public agency's administration, and programs and groups that can use them. Lastly, service delivery officials or street-level bureaucrats are better prepared to do their jobs (p. 44).

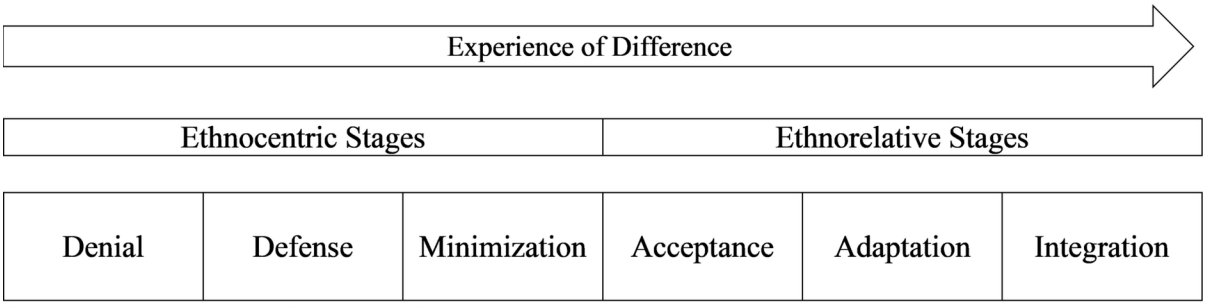
Models of Diversity and Cultural Competency

For public administration and other professional fields, models of cultural competence that have been developed for other areas of service can be utilized or adapted to facilitate students and practitioners thinking about and engaging in service-based practices and policies that facilitate an environment that is culturally competent. Three different models that can be used to help students and practitioners approach their clients from a perspective of cultural competence and also assess their orientation toward cultural competency are the Bennett Model of Cultural Competence, the Purnell Model for Cultural Competence, and the Sunrise model. Each can be utilized by individuals to assess where they are on the continuum of diversity and cultural competency and also as approaches to better understand the individuals they are tasked with serving as public administrators.

The Bennett Model

The Bennett Model was developed by Milton Bennett as a framework to explain how people experience and engage cultural difference (Bennett, 2014). The model includes a continuum that ranges from ethnocentrism to ethnorelativism. Bennett (1986) suggests that by having the different states of development along a continuum, the model can be used to diagnose the level of intercultural sensitivity of individuals and groups, to select appropriate training methods, and to sequence material that facilitate movement toward greater sensitivity (p. 180). Others have also noted the utility of the model in that it allows for the consideration of individuals and organizations operating at different points on the continuum relative to different dimensions of diversity (Creating Positive Dialogue, 2013). Each stage of the continuum represents a different way of experiencing difference for example Denial (of difference), Defense (against difference), Mimiziation (of difference), Acceptance (of difference), Acceptance (of difference), Adoption (of difference), and Integration (of difference). The states of the continuum are presented and briefly discussed below (see Figure 1).

Figure 1. Bennett model of intercultural sensitivity



Source: Adapted from Bennett (1986)

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In the stage of denial, individuals or organizations essentially deny that differences exist or when acknowledging there are differences, use broad categories of difference. As an example, an individual may understand that those who are Asian are not white, while not acknowledging variation in Asian cultures (Bennett, 1986, p. 185). According to Bennett (1986), this may occur because individuals have minimal contact with others who are different from themselves. Deane (1991) also suggests that those in this group may attribute sub-human qualities to those from different cultures and regard them with extreme prejudice (p.1) Defense refers to attempts to counter perceived threat to the centrality of one's worldview (p. 183). The most common type of defense is a denigration of difference or "negative stereotyping." An alternative approach to negative stereotyping is the promotion of one's culture as superior. Minimization refers to treating cultural differences as superficial. Essentially differences are acknowledged and not negatively evaluated, but are trivialized (p. 183). The stage of acceptance represents a shift from ethnocentrism to ethnorelativism. In acceptance, cultural differences are acknowledged and respected. Acceptance includes the acceptance of both behavior differences (language, etc.) and cultural value differences. Adaptation represents a combination of acceptance that also includes the adaption of behavior and thinking related to difference. Essentially, people or organizations in adaptation can shift their frame of reference (Deane, 1991). The final state, integration, is the adaptation of ethnorelativism into one's own identity. A person who is in the integrative stage can "construe differences as a process, adapt to those differences, and construe him or herself in various cultural ways" (p. 186). Once the stage of an individual or organization has been identified specific strategies, and training approaches can be identified to facilitate moving an individual or organization to a more ethnorelative stage or to strengthen and support ethnorelative perspectives. As an example, cultural awareness activities may be used for organizations or individuals who are in the denial stage to help facilitate them to recognizing differences (see Bennett (1986) and Deane (1991) for more examples).

The Purnell Model

Purnell (2005) suggests that cultural competence is a process. The Purnell Model, which was designed as a "holistic organizing framework with specific questions and a format for assessing culture that could be used across disciplines and practice settings" (Purnell, 2005, p. 10). Although primarily, utilized by health care professionals, the model, which is depicted as a circle, requires practitioners to consider several domains, the way they affect each other, and their contribution to culture. These domains include global society, community, family, and the person. The interior of the circle is divided into twelve wedges that depict cultural domains with a dark center that represents the unknown. Along the bottom of the model is a saw-toothed line that represents cultural consciousness. Although the line, according to Purnell (2000; 2005) primarily relates to health care, he suggests that organizations may also be represented on this line according to their cultural competence (Figure 2). While the model may be health care specific, given the range of services and programs provided by public administrators and the various types of client interactions that may occur, factors which may traditionally be associated with health care can also be relevant for general public administration and administrative and policy decision making.

As many public administrators engage in service delivery that is public-facing, understanding how culture may contribute to how administrators and the services provided are perceived can facilitate more engagement with the public and a heightened awareness of available services. Under the umbrella of culture, Purnell (2005) suggests that providers need be not only culturally competent but also culturally aware and sensitive. Cultural awareness he suggests has to do with "an appreciation of the external signs

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Figure 2. The Purnell model for cultural competence

Source: Purnell, Larry. (2002). The Purnell model for cultural competence. Journal of Transcultural Nursing, 13(3), 193-197.

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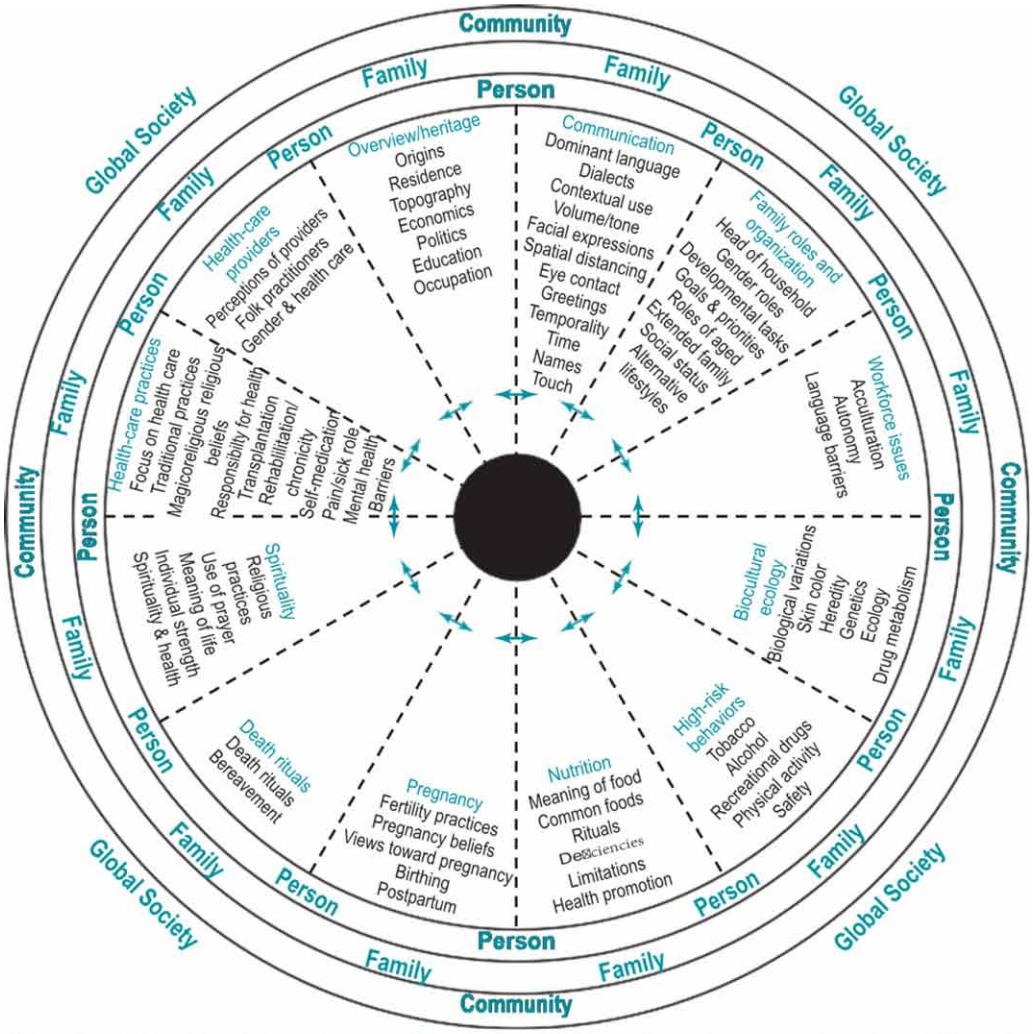

Variant cultural characteristics: age, generation, nationality, race, color, gender, religion, educational status, socioeconomic status, occupation, military status, political beliefs, urban versus rural residence, enclave identity, marital status, parental status, physical characteristics, sexual orientation, gender issues, and reason for migration (sojourner, immigrant, undocumented status).

Unconsciously incompetent: not being aware that one is lacking knowledge about another culture
Consciously incompetent: being aware that one is lacking knowledge about another culture
Consciously competent: learning about the client's culture, verifying generalizations about the client's culture, and providing culturally specific interventions
Unconsciously competent: automatically providing culturally congruent care to clients of diverse cultures

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of diversity, such as arts, music, dress, and physical characteristics" (p. 8). Cultural sensitivity is more directly behavior and not saying things or engaging in behaviors that might be "offensive to someone from a cultural or ethnic background that is different from the providers" (p. 8). The model then serves as a tool that can be used to consider the best way to serve and respond to clients and create organizational environments that are more culturally competent; thus enhancing the effectiveness of the organization and the services it provides.

The Sunrise Model[2]

Similar to the Purnell Model, the Sunrise Model was originally developed "as a conceptual holistic research guide and facilitator to help researchers discover multiple dimensions related to the theoretical tenants of the Theory of Culture Care" (deMelo, 2013, p. 21). Although one may focus on care as is relates to healthcare, Leninger (1997) suggests that care can be both abstract and concrete. Care can be defined as assistive, supportive, and enabling experiences or ideas that ameliorate or improve the human condition (Leninger 1988). Care can then refer to actions, attitudes, and practices that assist or help others toward healing and well-being (Leninger 1988). The theory of culture care is embedded in the belief that "worldwide, cultural and social structure factors, environmental contexts, ethnohistory, and language usage, and generic and professional care, along with three types of nursing actions and decisions could provide nurses with new information that had not been considered in the past all contribute the type of professional care or services to provide an individual" (deMelo, 2013, p. 21). The model itself is a visual diagram that presents several factors that can contribute to care in a variety of cultural contexts. Relative to public administration, the cultural and social structure dimensions, environmental contexts, ethnohistory, and language usage components are of particular importance. The model presents several sub-categories of further investigation to understand the dimensions above. The subcategories (Table 3) created by deMelo (2013, p. 22) represent a comprehensive list of descriptions for each dimension that can be used to understand the cultural norms of client populations better. Once understood, organizational policies, programs, implementation, and communication strategies can be adjusted to best suit the cultural norms, and realities of the individuals and population served.

Strategies for Diversity and Cultural Competency Instruction in Public Administration

Having considered various approaches to diversity and models for cultural competency, the challenge in public administration then becomes how to integrate activities that will enhance understanding be it in course curriculum or professional training. The example activities listed below, are designed to specifically touch on three of the cultural competency components presented in the cultural competency curriculum for public affairs (Carrizales, 2010). The framework includes knowledge, attitude, skills, and community-based competency components (Table 2).

Given the nature of the subject, it is important to create an environment where students feel comfortable communicating with each other about the various issues that will be discussed. Because the course was provided for public administration students one of the ways this was achieved was to continually connect the issues we were discussing in class and their perspectives to how they would impact their work as public servants and the subsequent effect that it would have on the clients they serve. In a professional setting, a facilitator may connect diversity to the work of the organization, and the individuals

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Table 3. Sub categories of the cultural and social structure dimensions of the sunrise model

Dimensions	Descriptions
Technological Factors	Access to technologies of information, access to means of communication, access to media and press, access to electronic devices at residence, access to health services and technologies, and others
Religious and Philosophical Factors	Religious practices, consultation to traditional healers, meanings of life, individual strength, beliefs, spirituality and health, personal values, norms and religious beliefs, freedom of thinking and expression, institutional values, priorities and goals, social roles, intra-institutional communication, inter-sector communication, inter-institutional communication, and others
Kinship and Social Factors	Familiar structure, birth position in the family, family values, roles of the aged, head of household, composition of family, developmental tasks, social status, bereavement of parents, family disease, family kinship/relations, friendship relations, emotional-sexual relationships, emotional situation, networks and social supports, access to culture, leisure and sports, migration, gender relations, social norms, public security, citizenship, access to means of transportation, conjugality, violence, and others.
Cultural Values, Beliefs, and Ways of Living	Beliefs, responsibility for health, folk practices of cure and care, perception of official health system, perception of health professionals, spirituality and health, cultural references, sexuality, race and ethnic group, access to culture and information, knowledge, attitudes, behavior, tobacco, alcohol, recreational drugs, physical activities, safety, interests, common foods, hygiene, world views, entertainment and leisure, alternative lifestyles, and others.
Political and Legal Factors	Access to public policies (security, health, education, environment, job, transports, social), access to justice, citizenship, political participation, freedom to think and express, intra-institutional communication, inter-sector communication, inter-institutional communication, and others.
Economic Factors	Knowledge, access to education, literacy (read and write), reading and writing habits, type of school (private or public), schooling, access to information, school violence, intellectual performance, solution of problems, attention, and others.
Environmental Factors	Destination of waste, public illumination, access to electricity grid, natural ventilation, drain, asphalt/pavement, septic tank, drinkable water, pollution (air, water, visual, noise), presence of vegetation or forest areas, presence of animals, goods supply (local commerce, to go to other locality, economic self-sufficiency), relations with the natural resources, access to drinking fountain, exposition to pesticide or fertilizers, exposition to chemical, physical agents etc., and others.
Language	Dominant language, contextual use, tone/volume, spatial distancing, eye contact, facial expressions, greetings, touch, language, dialect, and others.
Ethnohistory	Community history, population history, life history, total time living in the community, sense of belonging, social participation in the community, and others.

Source: deMelo (2013)

served. It was also important to communicate to the students that what they got out of the course and the activities we completed would be directly related to the effort they put in and their willingness to make themselves uncomfortable.

We began the semester with a "Privilege Walk." "The purpose of the Privilege Walk Activity is to learn to recognize how power and privilege (or advantage) can affect our lives even when we are not aware it is happening. The purpose is not to blame anyone for having more power or privilege or for receiving more help in achieving goals, but to have an opportunity to identify both obstacles and benefits experienced in our life" (The purpose of the privilege walk" ND). To complete the walk, a variety of statements are read about privilege. The statements range from the obvious to those that are notably less. To begin the walk, students line up shoulder to shoulder with their eyes closed. Statements are then read aloud by the facilitator. When a statement reflects an advantage, students are instructed to take a step forward (Example: If English is your first language, take a step forward). When statements reflect disadvantage, students are instructed to take a step backward (Example: If you have visible or

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Table 2. The framework for cultural competency curriculum in public affairs

Cultural Competency Components	Content Examples
Knowledge-based	Definition/Terms Local and national demographics Social disparities Policy and legal
Attitude-based	Self-reflection Societal biases Organizational culture/change
Skills-based	Communications Program development Program assessment Technology
Community-based	Public involvement Nonprofit partnerships Internships

Source: Carrizales (2010)

invisible disabilities, take a step backward). After all the statements are read, students open their eyes, and the facilitator begins a discussion that focuses on privilege and the various ways it manifests. In the context of public administration, we also discussed how the various privileges that individuals experienced could affect how they operate in the public sector particularly as it relates to the creation of programs, designing of policy, and administration of programs. The focus on why privilege matters for public administration was connected to who they would be as administrators and the consequences of their perceptions for clients. Beginning the course with the "Privilege Walk" also provided the students with a sense of how the course was going to be structured and what was going to be expected of them regarding their engagement and involvement.

Knowledge-Based Cultural Competency

As noted in Table 1, knowledge-based cultural competency includes an understanding of terms, demographics, disparities, and policy and legal implications. There are a variety of ways students and professionals to access and discuss this information. Following the historical discussion of diversity in public administration and bureaucracies which include voluntary and involuntary approaches or requirements for public agencies, we utilized *Diversity and Public Administration: Theory, Issues, and Perspectives by* Mitchell F. Rice and also included supplemental readings from *Cultural Competency for Public Administrators* by Kristen A Norman-Major and Susan T. Gooden. The course was broken down into thematic weeks that allowed the students to discuss the legal requirements for diversity in public administration for different groups while simultaneously thinking about cultural competency and what it looks like in public spaces.[3] The readings were typically associated with an in-class activity that involved the students, working in groups, discussing and presenting what diversity looked like under different institutional orientations toward diversity and degrees of cultural competency. One such activity is "Visioning Diversity."[4] In the exercise, students are broken into groups and provided a description of an organization. The description includes the size of the organization, employee, community, and client demographics, the type of services provided by the organization, and background information on

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challenges the organization has experienced both internally and externally. They are then tasked with discussing the type of diversity the organization appears to value (EEO, Affirmative Action, or Diversity Management), the potential legal and organizational consequences, and the level of cultural competence (based on one of the models). Following this, students are required to discuss what the organization would look like and how it would interact with clients if it truly valued diversity and cultural competency. Students are then instructed to identify three action steps that the organization could implement to create an organization that truly values diversity and is culturally competent. Once the action steps are identified, the students are tasked with designing a logo that would communicate to the public the organization's vision of diversity relative to the services it provides. Students then present their case, diagnosis, suggestions, and logo to the class.

Attitude Based Cultural Competency

As professionals who will or do engage the public, it is important that students are aware of how they may perceive individuals and how this perception may affect the degree of neutrality they use when approaching tasks related to their profession. Because we are often unaware of the way that bias may affect our interactions with individuals, the Implicit Association Test (IAT) can be used to measure attitudes and beliefs that individuals may be unwilling or unable to report. The IATs have been created by Project Implicit housed at Harvard University. Project Implicit which is "non-profit organization and international collaboration between researchers who are interested in implicit social cognition-thoughts and feelings outside of conscious awareness and control" (https://implicit.harvard.edu/implicit/aboutus.html). After completing the selected IAT's students are required to complete a reflection that addresses the following questions:

1. Were you surprised by your test results? Why or why not?
2. What factors related to your life experiences do you believe contributed to your test results?
3. Based on the test results, are there things moving forward that you will change or do differently to confront the bias reported?

One thing that was important to communicate with the students was the IAT was a tool that we were using to facilitate conversation and reflection about beliefs and values, it was not without limitations and controversy (Goldhill, 2017). When responding to the questions, students were reminded that the purpose of the assignment is to think about perceptions, not to criticize the IAT. To contribute to the open environment, I, as the instructor also completed the IAT's and the reflections and shared my results with the students. Although all students were encouraged to share during class, students were not required to share their reflections verbally but were encouraged to think about how what their results suggested might matter in their personal and professional interactions.

Skills Based Cultural Competency

In the course, skills-based cultural competency was included through two projects. The first was a cultural competency assessment. The second was a diversity in public administration curriculum assignment. Both of these assignments placed the student in a professional role other than that of student and required them to think about how to integrate what was learned over the semester for two separate

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audiences; working professionals and future students. The cultural competency assessment places them in a management role and requires them to think about what an assessment process for cultural competency in an organization includes.

Working with the members of their group students were required to identify a public service agency that engages directly in client services; an agency that works directly with the public. Students were then required to design a cultural competency assessment for that specific agency that was rooted in the Bennet, Sunrise or Purnell Models of Cultural Competency. The project was required to include: an assessment that the agency could use to evaluate the cultural competency of the internal workings of the organization and an assessment that the agency could use to evaluate the cultural competency of interactions with the public. The project was required to begin with an overview of the agency which included: the name, mission, location, services provided, information about the population served and the community (age, income, education, race/ethnicity, etc.).[5] Students were also required to create a process map/flow chart that demonstrates the various points of contact that a client would have when interacting with the organization and include a detailed explanation of the process map/flow chart in the final project. Once completed, the students were required to present the assessment.

The diversity curriculum assignment places students in the role of instructor and requires them to create an activity that could be integrated into a public administration class that is *not* diversity-focused, but in which issues of diversity are important (Example: Budgeting for Public and Nonprofit Organizations). The students then present the activities and walk their classmates through the activity, providing commentary that explains why the themes discussed in the assignment are useful and important for broader issues surrounding public administration. The activities created by the students ranged from in-class simulations that focused on the distribution and allocation of resources to assignments that focused on differences in race, ethnicity, gender, religious affiliation, ability, socioeconomic status, and communication and personality style.

In addition to reflecting on their IAT's, at the end of the semester, students were asked to reflect on the importance of diversity and cultural competency in public administration. One student noted, "As administrators, you are not only serving the public but serving the public in a system that is embedded in a history that you need to be aware of." Another student noted that "It is important for graduate students who are about to enter the workforce to engage in academic and professional dialogue. The creating and presentation of our curricular exercises created an opportunity to do that as well as exercise a great deal of professional autonomy and responsibility." Lastly, one student stated, "It was a great experience and highlighted the importance of focusing on diversity issues in the public sector. It showed that in order to be a successful public servant you need to be aware of the different communities you serve and their needs and recognize that differences should be taken into consideration when creating and administering policies and programs."

Although student outcomes following the completion of the course were not systematically analyzed, research suggests that diversity courses can have positive outcomes for students and practitioners. Probst (2003) finds that when compared to other students, students who completed a diversity course were significantly "more egalitarian with respect to gender roles, more positive with respect to disabled, racial minority, and gay, lesbian, and bisexual workers, and significantly more tolerant of different cultures" (p. 238).

A considerable number of public administration programs are accredited by the Network of Schools of Public Policy, Affairs and Administration (NASPAA).[6] In 2007 NASPAA changed its accredited program competencies and mandated that programs seeking accreditation integrate cultural competence and

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diversity across the curriculum. Specifically, NASPAA Competency 5 requires that public administration students be able to "Communicate and interact productively with a diverse and changing workforce and citizenry." In spite of this, Sabharwal, Hajal-Moghrabi, and Royster (2014) find that cultural competency and diversity remain negligible components across the public policy, affairs, and administration curriculum. Although there is a clear recognition that diversity and cultural competence are importation for public administration, public administration lags behind other areas in promoting its importance. To effectively address the changing demographics of the United States population, Sabharwal, Hajal-Moghrabi, and Royster (2014) identify three challenges that public administration must addresses. One of these is that schools of public administration and policy must educate and train future public servants on issues of diversity and cultural competency.

Further, as programs consider public service globally, students will also need to understand the various ways in which diversity and inclusion are defined and understood outside of the context of the United States. The Organization of Economic Cooperation and Development (OCED) (2018) identifies three ways in which OCED countries define diversity, diversity as equal opportunity, diversity and a resource, and diversity as inclusiveness (OCED, 2018). The global perspective for cultural competency and diversity in public administration is another area where enhanced cultural competency instruction in public administration programs and knowledge and awareness among faculty, students, and practitioners is important for current and future public and nonprofit administrators.

The chapter has presented one approach to providing students with diversity-focused curriculum in a graduate-level public administration program. This approach includes an overview of the historical legacy of diversity in public administration, legal approaches to organizational diversity, models that can be used to assess the diverse cultural experiences of individuals for more personalized practice, and activities that can be utilized and adapted to educate public administration students and practitioners on issues of diversity and cultural competency. In the semesters that have followed the initial instruction of the course, anecdotal conversations with students have suggested that one course is not enough for students to fully grapple with issues of diversity in public administration. And, while students can think about these issues independent of their assignments, for diversity to be viewed as an integral component of a public administration program, programs must purposely and comprehensively integrate diversity across their curriculum and be willing to consider the role the program and faculty play in preparing culturally competent public administrators.

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ENDNOTES

1. Readers who are interested in the course syllabus can contact the author.
2. The Sunrise Model is also referred to as the Sunrise Enabler.
3. The topics discussed over the course of the semester included race, gender, sexual orientation, age, language, country of origin, and disability.
4. The "Visioning Diversity" exercise is a modified version of the "A Vision of Valuing a Diversty Community" activity presented in the Diversity Resource Guide by the University of Houston. The resource guide can be accessed here: https://www.uh.edu/cdi/diversity_education/resources/activities/pdf/diversity%20activities-resource-guide.pdf. https://www.uh.edu/cdi/diversity_education/resources/activities/pdf/diversity%20activities-resource-guide.pdf.
5. The component of the assignment that focused on the demographics of the population served and community also touches on the knowledge based cultural competency advocated for by Carrizales (2010).
6. NASPAA is the recognized global accreditor of master's degree programs in public policy, public affairs, and public administration (www.naspaa.org).

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Chapter 43
The Interactions Between Cultural Intelligence, Job Burnout, and Task Performance of Expatriates

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ABSTRACT

In this chapter, cultural intelligence, one of the most crucial capabilities of employees for overcoming the cultural obstacles of different countries, is figured out in depth. This is attained by checking out the relationships between cultural intelligence, job burnout and task performance of expatriates who are employees sent by their company to a host country for a period. Since expatriates are the employees who face actual barriers in adapting and living in different cultures, a quantitative research was conducted among 156 expatriates working at the marketing department of different multinational companies, operating in Turkey. According to the results, expatriates with high cultural intelligence face burnout less at the workplace. Moreover, task performance of these employees tends to increase because of their cultural intelligence. Consequently, with the help of this chapter, a paramount empirical study on cultural intelligence and its correlates is added to the literature.

INTRODUCTION

Stemming from the latest developments in the communication and information technologies as well as transportation services, the earth is becoming smaller in terms of geography. By contrast it is developing at a rate, which has been experienced before recently. According to IMF (2017) total Gross Domestic Product of 190 countries around the world is expected to be more than 83 trillion American dollars by the end of 2018. Owing to this economic setup around the world, companies are operating beyond their

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origin countries as a necessity. Trying to achieve their best, they can either hire employees from the host country or they can send their own employees from the origin country to the host country. These employees are mostly named as 'expatriate' or 'expat' in short.

Expatriates are the employees who face the difficulties of cultural and language barriers in host countries. They are exposed to survive in a different environment in terms of language, rules, traditions and customs. That is why 'working in a diverse environment' or 'managing diverse workforce' is up to date issues in both general and human resources management. But sadly, not all the employees are lucky to overcome cultural and language barriers easily. As a result they may have burnout syndrome or they can be dissatisfied with their job as well as their job performances may deteriorate. To overcome these negative results, diversity management should be effective in terms of supplying the help, which expatriates need to adapt to the new work atmosphere. If there is an ineffective adaptation process for expatriates, after a while they lose their self-confidence, dissatisfied with the conditions offered and lastly burnout occurs. But if it is in the opposite way, they feel more satisfied and happier, and they tend to exert extra performance in their company.

The main aim of this study is to find out how the cultural intelligence and linguistic intelligence of expatriates overcome the diversity barriers and investigate whether these intelligences play role in eliminating their job burnout and fostering their task performances. To achieve this, using the most reliable scales in the literature, a quantitative research technique was applied among sufficient number of expatriates working in marketing departments of subsidiary companies operating in Turkey. The results will put forth the links between cultural and linguistic intelligence and job burnout and task performance, which form the scope of this study. So in this chapter, it is intended to both fill a gap in the related literature and to supply valuable information and insight to the practitioners.

BACKGROUND

It is unquestionable that nowadays globalization gains more and more power than it did before. Every day companies search for new opportunities outside their origin country to maximize their profits. They search for new markets as well as penetrating in existing ones abroad. According to United States Bureau of Economic Analysis, US foreign direct investment raised from 1.32 to 6.01 trillion dollars in the period between 2000 and 2017. And sending employees for their operations abroad helped these types of companies to increase their foreign direct investments. From the human resources perspective, these employees who are sent by their parent companies to other countries in order to live and work at these host countries for a time period between two years and seven years, in general, are called as 'expatriates' (Caligiuri, 2000).

Throughout this process companies give emphasize on their expatriates' adjustments to host countries. This is because when employees have difficulties in getting used to working at a host country, their job performance tends to deteriorate which in turn causes a decrease in organizational effectiveness (Liu and Shaffer, 2005). Besides there being many factors affecting an expatriate's adjustment to a new country, at this point, cultural factors take the head. The rationale behind this is, expatriates' facing these cultural factors firstly, and then learning and adjusting to them, since there are important differences from one country to another among the components of culture such as; values, attitudes, beliefs and norms (Van Vianen, De Pater, Kristof-Brown & Johnson, 2004).

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In this research, the relationships among cultural intelligence, job burnout and task performance are based on the theory of multiple intelligences (Gardner, 1983), the Job Demands-Resources (JD-R) model (Demerouti, Bakker, Nachreiner & Schaufeli, 2001) and the Conservation of Resources (COR) theory (Hobfoll, 1989). Based on the early studies of Gardner (1983), today it is known that there is not one type of intelligence. Cultural intelligence has roots in both interpersonal and linguistic intelligence out of seven classes introduced by Gardner (1983). From this perspective cultural intelligence plays a vital role on the link between job demands and job resources as a motivating factor. Here working at a host country, which means different culture and different work environment, can be named as a job demand (Bakker & Demerouti, 2007). According to the Conservation of Resources (COR) theory, as a general principle one must invest resources in order to gain more resources or not to lose existing resources (Hobfoll, Halbesleben, Neveu & Westman, 2018). In this manner cultural intelligence acts as an important resource for expatriates to gain resources as pay, promotion, etc. in their company.

MAIN FOCUS OF THE CHAPTER

In this section, the concepts of cultural intelligence, job burnout and task performance are being analyzed in detail and a comprehensive literature scanning is aimed to be conducted.

Cultural Intelligence

In general, an individual's capacity of obtaining, perceiving, absorbing, processing and understanding numerous types of information, stimulants and messages signals to his/her intelligence (Gardner, 1983; Sternberg, 1985). The idea of one general type of human intelligence was eliminated by the work of Gardner (1983) 'the multiple intelligences theory'. According to Gardner and Hatch (1989), multiple intelligences consist of seven intelligences, which are; 'logical-mathematical', 'linguistic', 'musical', 'spatial', 'bodily-kinesthetic', 'interpersonal' and 'intrapersonal'. Among these, cultural intelligence is related to social intelligence which can be defined as, an individual's scope of completing actions with and through other people and emotional intelligence that can also be defined as, the extent to which an individual interpret and transmit human emotions (Earley & Peterson, 2004). But cultural intelligence is apart from these two related types of intelligence. It can be defined as, the capacity and capability of an individual to operate and manage effectively in diversified cultural environments (Earley & Ang, 2003). In another definition cultural intelligence was described as, feeling enthusiasm to learn new aspects of a culture and being flexible and competent to understand features of a new culture (Thomas & Inkson, 2005). Briefly, cultural intelligence (CI) or cultural quotient (CQ) can be defined as, an individual's capacity to perceive, understand, learn, react and adapt to a wide range of features of a new culture.

Additionally, cultural intelligence provides individuals to understand different features in a diversified cultural environment and adapt to it both faster and easier (Alon and Higgins, 2005). Those with high levels of cultural intelligence may adjust to a different culture easier than those with high levels of other dimensions of intelligence. This is because reactions of people mostly differ from one culture to another. For example attitudes toward colors may differentiate in different countries; although the color of red is favorable in India, it is a symbol of mourning in South Africa.

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The cultural intelligence framework has been based upon the model of multiple intelligence introduced by Sternberg and Detterman (1986). They drew a frame consisting of four elements for an individual's intelligence from which cultural intelligence concept has been derived. These four components of intelligence are noted as: (1) metacognitive intelligence, (2) cognitive intelligence, (3) motivational intelligence, (4) behavioral intelligence (Earley & Peterson, 2004; Ng, Van Dyne & Ang, 2009).

Metacognitive Intelligence

Metacognitive intelligence essentially refers to competence of attention to intercultural interactions (Earley & Ang, 2003). This type of intelligence provides basis for perceiving and understanding diversified situations related to culture. For example, one with high metacognitive intelligence can easily realize different norms and values during interactions (Ng, Van Dyne & Ang, 2009). According to Early and Mosakowski (2004), metacognitive intelligence dimension of cultural intelligence signals to the intellectual processes taking place in an individual's mind. Moreover, this sub dimension of cultural intelligence consists of appraising progress on adapting to a new culture (Ang & Van Dyne, 2008) and conducting intellectual plans to understand and learn cultural norms (Van Dyne, Ang & Koh, 2008).

Cognitive Intelligence

Cognitive intelligence engages in knowledge of norms, values, attitudes and cultural preferences of a different culture obtained by education or based on personal experience (Ang, Van Dyne & Koh, 2006). In this type of cultural intelligence, an individual interacting with a different culture has a definite perception of norms and values of both original and the new cultures. Based upon this, when he/she faces a new culture, an individual interiorizes the similarities and dissimilarities between the cultures and adapt to the new one easier (Ang, Van Dyne, Koh, Ng, Templer, Tay & Chandrasekar, 2007).

Motivational Intelligence

Motivational intelligence refers to intrinsic motives for adapting to different conditions and situations in a diversified cultural setting (Earley & Ang, 2003). Motivational intelligence is the desire that pushes one to interact with different cultures. This dimension of cultural intelligence signals to an individual wish to communicate with people from different cultures. It reflects the values of an individual about new cultures (Van Dyne, et al., 2008). Without motivational intelligence, establishing strong relationships with different cultures is almost impossible.

Behavioral Intelligence

The last one, behavioral intelligence refers to the degree, an individual behaves in a proper way in a different cultural situation such as, using appropriate words and tones (Ng, et al., 2009). It cannot be separated from cognitive and motivational intelligence as they are providing basis for individuals to behave in an appropriate way when facing a different culture (Ang, et al., 2006). People, who have high levels of behavioral intelligence, act in accordance with the different culture, which they are interacting with. They demonstrate suitable behaviors for example, when they are eating food or greeting each other, or shaking hands.

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Job Burnout

One of the most challenging issues faced in todays' organizations is, an employees' psychological ties with his or her job nowadays. Among these, one concept is differentiating due to its effects on many job related issues. It is job burnout. In this section, after a brief historical research, the concept will be defined, its phases and sub dimensions will be discussed and factors affecting burnout and its consequences will be examined.

Historical Development of Job Burnout

The roots of research on burnout, date back to 1970s. This initial phase took place between 1975 and 1980. Due to increasing demand on burnout research, in 1980s the concept was examined empirically. Beginning with the journal of Freudenberger (1975) addressing the issue of burnout in a health-care agency, Maslach (1976) was also among the pioneers of burnout literature who concentrated on emotional stress of human services employees (Maslach, Schaufeli & Leiter, 2001). Following these years, throughout 1980s, empirical researches on burnout expanded. These were mostly on the basis of quantitative research. In this period, some reliable measures consisting Maslach Burnout Inventory (Maslach and Jackson, 1981) were developed. From the 1990s until now, the empirical researches have jumped from the health-care and human service sectors to other sectors including, education, manufacturing and technology, etc (Maslach, et al.,2001).

Definition

The concept of burnout has been well in accordance with job stress since it is thought to be a response to job stressors (Lee & Ashforth, 1996; Maslach, 1982). According to Conservation of Resources Theory (Hobfoll, 1989), burnout takes place when an employee loses a resource or resources, which is perceived as valuable, and he/she has a feeling of inadequacy. So, burnout can be defined as an ailment of mental and emotional debility of employees working mostly in a demanding and stressful work conditions (Maslach & Jackson, 1981). Moreover from a broader view, job burnout refers to the psychological states of employees, which have the possible or actual links with reactions when faced with stressful conditions at work (Swider & Zimmerman, 2010).

Subdimensions of Job Burnout

The existing literature about burnout relies mostly on the multidimensional theory of burnout (Maslach, 1982). According to this theory, burnout has three dimensions, which are, 'emotional exhaustion', 'depersonalization' and 'diminished personal accomplishment'.

Emotional Exhaustion

Emotional exhaustion dimension is the most observed one when compared to other sub dimensions of burnout. According to Shirom (1989), since exhaustion is the predominant phenomena, the other dimensions are needless. But according to Maslach et al. (2001), without depersonalization and diminished personal accomplishment, burnout cannot be understood as a whole concept. Emotional exhaustion

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occurs when one feels all of his/her energy and emotional resources have come to an end (Cordes & Dougherty, 1993). In general, exhaustion refers to the stress dimension of job burnout. It consists of withdrawal from work mentally and emotionally to cope with the stress stems from the work conditions (Maslach, et al., 2001).

Depersonalization

The second dimension of burnout is named as 'depersonalization', which is the defensive coping behavior of employees with stress at work (Lee &Ashforth, 1996). With depersonalization, an individual treats people around him/her, especially clients as objects, not exactly human beings (Cordes & Dougherty, 1993). This is done by taking customers, tasks or coworkers as impersonal factors (Schaufeli & Enzmann, 1998). In this dimension employees may behave cynical towards other parties through interactions taking place between them (Maslach, et al., 2001). In such cases a depersonalized employee may behave negatively towards people or disregard individuals taking place in his/her work life. All these attempts are for the expectancy of eliminating the negative factors affecting them (Maslach & Pines, 1977).

Diminished Personal Accomplishment

The final dimension of burnout, which is, diminished personal accomplishment, is characterized by one's feeling of diminished job competence and success in the organization (Cordes & Dougherty, 1993). It can be explained in other words as an employee's losing self-trust and accepting himself/herself as a poor performer based on his/her self-evaluation (Maslach & Leiter, 2008). When an employee perceives a lack of progress in job performance or self-development at work, these entail to personal feelings of diminished accomplishment (Cordes & Dougherty, 1993; Lee & Ashforth, 1996; Maslach, et al., 2001).

Besides all of the dimensions of job burnout being separate and concrete structures, in contrast to sequential process perspectives of burnout (i.e., Golembiewski & Munzenrider, 1981), there is no precise sequence among these dimensions (Cordes & Dougherty, 1993).

Factors Causing Job Burnout

There are plenty of work-related factors which cause stress and in turn cause job burnout at workplace. Among them some have attracted more attention from scholars and examined by them. For example, increased workload that exceeds formal assignments has been investigated to cause burnout (Cordes & Dougherty, 1993). Moreover, unpleasant personal relations with coworkers and supervisors have effects on burnout, especially exhaustion (Leiter & Maslach, 1988). Similarly, increased role conflict and role ambiguity cause job burnout among employees (Schwab & Iwanicki, 1982). Moreover, distribution of resources on an unfair and subjective basis among employees, such as pay and promotion is another issue which generates burnout (Riolli & Savicki, 2006). In addition to these, personal characteristics (Bakker, Van Der Zee, Lewig & Dollard, 2006) and personal expectations (Kim, 2011) affect employees' job burnout. Sensitive employees and employees without social support feel burnout more than others. Also, employees with high expectations are more faced with burnout when they can't reach their aims.

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Consequences of Job Burnout

Since the importance of burnout is evident for employees' attitudes toward their jobs and organizations, it has been quite essential to search for the possible consequences. Among these the consequences of burnout may be divided into two groups as, 'individual' and 'organizational' (Swider & Zimmerman, 2010). Among the individual outcomes of burnout exist, physical problems (i.e. stomach pain, muscle pain, and headache) and psychological problems, (i.e. minor and major depression) (Peterson, Demerouti, Bergström, Samuelsson, Åsberg & Nygren, 2008) and work-family conflict (Burke & Greenglass, 2001). On the other side, the organization related consequences may be grouped as, an increase in turnover rates of employees (Leiter & Maslach, 2009), absenteeism (Iverson, Olekalns & Erwin, 1998), a decrease in personal interactions with coworkers and clients (Maslach & Leiter, 2008) and furthermore decrease in job performance (Parker & Kulik, 1995) and organizational citizenship behavior (Chiu & Tsai, 2006) and job satisfaction (Jayaratne & Chess, 1984).

Task Performance

Beginning from 1970s until today, job performance has been handled as a multidimensional concept which consists of an employee's starting at a permanent position in the organization, meeting the standards of formal duties and exceeding formal tasks and duties by doing favorable things for the organization (Katz & Kahn, 1978). Built on this classifying understanding of job performance, Campbell (1990) generated a performance model, which breaks down it several pieces. Among these are, job-specific task proficiency, non-job specific task proficiency, written and oral communication, effort, personal discipline, promoting team and peer performance, supervision and leadership and management and administration. Based on this study, Motowidlo and Van Scooter (1994) classified job performance into three general themes. The first is the differentiation between prescribed and discretionary role behavior. The second is, cooperation and helpfulness behaviors in organizational citizenship behavior and the last one is, the differentiation between behaviors related to task proficiency and behaviors not related to task proficiency.

So based on these three themes, Borman and Motowidlo (1993) separated task performance from contextual performance. Contextual performance consists of role behaviors beyond core tasks, which are being helpful and cooperative with coworkers, following and supporting organizational rules and volunteering for extra duties. Apart from this, task performance includes behaviors, which directly relate to main duties of an organization by conducting technical processes or maintaining its technical needs (Motowidlo & Van Scooter 1994).

Hypotheses

In this research, the relationships among cultural intelligence, job burnout and task performance of expatriates are analyzed based on theoretical foundations. In this sections, both stemming from the theories and the previous work by other researchers in this field, hypotheses of the research are developed.

Firstly, according to Chen (2015), cultural intelligence was found to be related to general interaction and work adjustment of foreign workers. Moreover, cross-cultural motivation, an element of cultural intelligence, was found to have a link with expatriate work adjustment (Chen, Kirkman, Kim, Farh & Tangirala, 2010). Additionally, since cultural intelligence has positive effects on job stress of foreign

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workers (Tay, Westman & Chia, 2008), it is expected to have positive effects to decrease job burnout of expatriates. For this reason, it is hypothesized as;

Hypothesis 1: There is a negative and significant relationship between cultural intelligence and job burnout.

Furthermore, cultural intelligence was found to predict cultural adaptation, and task performance (Ang et al., 2007) as well as performance of expatriates (Rose, Ramalu, Uli & Kumar, 2010). Since, it is evident that in order to increase task performance, an expatriate should have high cultural intelligence. So it is expected as;

Hypothesis 2: There is a positive and significant relationship between cultural intelligence and task performance.

Lastly, when an employee is engaged with job burnout, he/she is faced with many negative individual and organizational consequences. One of these outcomes is his/her performance. Since, job stress has negative effects on performance (Arsenault & Dolan, 1983; Jamal, 1984), it is also expected that burnout has the similar effects on performance. According to Bakker, Demerouti and Verbeke (2004) and Freidman (2000), burnout has negative effects on performance. Thus;

Hypothesis 3: There is a negative and significant relationship between job burnout and task performance.

SAMPLING AND PROCEDURE

In order to measure and evaluate the links between cultural intelligence, job burnout and task performance, quantitative research design was chosen in this research. In this research design, surveys were prepared in accordance with the most reliable and suitable measures in the field. As they were English in original, firstly the measures were translated into Turkish and then back into English by the help of a group of linguistic experts in the university.

The participants of the research were chosen to be expatriates working in Turkey as the host country. After a carefully scan in a wide range of sectors in Turkey, it was decided to include expatriates working in the marketing department of the multi-national companies operating in consumer goods sector due to the sufficient number of expatriates working in those companies. Mostly located in Istanbul, there were also participants from Ankara, Izmir and Adana. In sum, a total of 156 expatriates participated in this research. 58 percent of participants were male, and 42 percent, female. The majority of the group, 35 percent were between the ages 40-50 (SD=6,45).

Scales Employed

Cultural Intelligence

So as to measure cultural intelligence, the 20-item measure developed by Ang, Van Dyne, Koh, and Ng, (2004) was used. The original measure consists of four sub scales, which are metacognitive (4-items), cognitive (6-items), motivational (5-items) and behavioral (5-items) dimensions on a 7-point Likert

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type scale. Sample items are like; 'I am conscious of the cultural knowledge I apply to cross-cultural interactions.' for metacognitive dimension, 'I know the legal and economic systems of other cultures.' for cognitive dimension, 'I enjoy interacting with people from different cultures.' for motivational dimension and lastly 'I change my non-verbal behavior when a cross-cultural situation requires it.' for behavioral dimension. The cronbach's alpha coefficients were .85 for metacognitive, .88 for cognitive, .78 for motivational and .90 for behavioral dimension of cultural intelligence.

In order to maintain validation of the cultural intelligence scale, exploratory and confirmatory factor analyses were done. Kaiser-Meyer-Olkin and Bartlett sphericity test results were, in the accepted range by Field (2000). (KMO: 0,825; X^2: 635,20 /Sd: 25) Moreover, all the factor loadings for the cultural intelligence scale were higher than 0.500 and validating a 4 components structure as, metacognitive, cognitive, motivational and behavioral. The goodness of fit indices is well in the range accepted by Hu and Bentler (1999) (χ^2/df: 2.78, GFI: .93, NNFI: .95, CFI: .97, RMSEA: .074).

Job Burnout

In order to measure job burnout, the 22-item burnout scale developed by Maslach and Jackson (1981) was used. The measure consists of three sub scales, which are exhaustion (9-item), depersonalization (5-item) and personal accomplishment (8-item) on a 7-point Likert type scale. Sample item for exhaustion sub scale is, 'I feel used up at the end of the work day.' Sample item for depersonalization is 'I feel I treat some recipients as if they were impersonal objects'. Sample item for personal accomplishment is 'I can easily create a relaxed atmosphere with my recipients'. The cronbach's alpha coefficients were .82 for exhaustion, .80 for depersonalization and .89 for personal accomplishment dimension of burnout.

After exploratory and confirmatory factor analyses it is understood that, all the factor loadings for the burnout scale were higher than 0.500 and validating a 3-components structure as, exhaustion, depersonalization and personal accomplishment. The goodness of fit indices is as; χ^2/df: 3.18, GFI: .92, NNFI: .94, CFI: .95, RMSEA: .082). So, it is understood that, this scale is both reliable and valid.

Task Performance

In this research, self-reported task performance of expatriates was measured by the 9-item sub-scale of task performance generated and validated by Goodman and Svyantek (1999) on a 7-point Likert type measure. A sample item is 'I am competent in all areas of the job and I handle tasks with proficiency.' The cronbach's alpha coefficient for this measure was calculated as .84. According to exploratory factor analysis, it was verified that task performance scale was accepted as one component with no sub-dimensions. The goodness of fit indices is as; χ^2/df: 2.68, GFI: .94, NNFI: .95, CFI: .98, RMSEA: .054.

RESEARCH FINDINGS AND DISCUSSION

With the help of the statistical package programme of IBM SPSS 20.0, analyses were conducted to reveal the links between cultural intelligence, burnout and task performance of expatriates working at the marketing departments of multinational companies in Turkey. Firstly, means and standard deviations of answers given by these expatriates were evaluated and shown at Table 1. And then, the correlations between cultural intelligence, job burnout and task performance were obtained and shown at Table 1.

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Table 1. Means, standard deviations, correlations and reliabilities

Variable	Mean	*SD*	1	2	3
1. Cultural Intelligence	4.02	2.08	(0.83)		
2. Job Burnout	3.65	1.52	-0.26*	(0.86)	
3. Task Performance	4.28	1.95	0.38**	-0.51**	(0.85)

*:p<0.05 **:p<0.01 ***:p<0.001

According to the results, it has been revealed that, there is a significant and negative relationship between cultural intelligence and job burnout (r= -0.26; p<0.05). Due to this, H_1 is supported. Moreover, as seen on Table 1, there is a positive and significant moderate relationship between cultural intelligence and task performance (r= 0.38; p<0.01). Accordingly, H_2 is also supported. Lastly, there is a moderate, negative and significant relationship between job burnout and task performance (r= -0.51; p<0.01). As a result, H_3 is supported, too. The results demonstrate that, expatriates of multinational companies face less burnout when they have higher cultural intelligence. This shows, cultural intelligence is a capability for overcoming culture-based stressors at work. Similarly, expatriates with higher score on cultural intelligence, tend to perform better at work. On the contrary, when they face job burnout, their task performances deteriorate due to negative consequences of burnout.

A more detailed, correlation analysis, showing the relations between sub-dimensions of the structures discussed above, can be found at Table 2.

Table 2. Correlations among sub-dimensions and reliabilities

Variable	1	2	3	4	5	6	7	8
1. Metacognitive	(0.85)							
2. Cognitive	0.42***	(0.88)						
3. Motivational	0.48***	0.21***	(0.78)					
4. Behavioral	0.37***	0.19***	0.53***	(0.90)				
5. Exhaustion	-0.61**	-0.43**	-0.39**	-0.40**	(0.82)			
6. Depersonalization	-0.38**	-0.28**	-0.42**	-0.46**	0.24**	(0.80)		
7. Personal Accomp.	0.44**	0.35**	0.33**	0.27*	-0.62**	-0.38**	(0.89)	
8. Task Performance	0.28**	0.22**	0.38**	0.32*	-0.57**	-0.41**	0.65**	(0.84)

*:p<0.05 **:p<0.01 ***:p<0.001

As seen on Table 2, there are significant and negative relationships between exhaustion sub dimension of burnout and metacognitive, cognitive, motivational and behavioral sub dimensions of cultural intelligence respectively. Among them, beginning with the exhaustion dimension, the strongest negative correlation exists between exhaustion and metacognitive intelligence (r= -0.61; p<0.01). This may occur because; metacognitive intelligence is the key for an expatriate to adapt to a new culture by generating new maps for norms and rules of the new culture. Differently, depersonalization sub dimension of burnout had the strongest negative relationship with behavioral dimension of cultural intelligence (r= -0.46;

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$p<0.01$). It is because, when behavioral intelligence of expatriates is high, they behave like the people from the host country and host culture, which in turn enables them establish relationships with people. So this behavior is the opposite of the depersonalization and this explains the rationale behind the obtained result. Furthermore, personal accomplishment perceptions were positively related to sub dimensions of cultural intelligence. When an expatriate's cultural intelligence is high, he/she believes himself/herself more to complete tasks successfully. In addition to these, task performance of expatriates is positively related with sub dimensions of cultural intelligence. Among these the strongest correlation occurs between task performance and motivational intelligence. When expatriates have motivation to adapt to a new culture, their task performance increases most. Also, task performance is negatively related with exhaustion and depersonalization, whereas positively with personal accomplishment. When expatriates feel exhausted, depersonalize and lose confidence of accomplishment, their task performance decreases.

FUTURE RESEARCH DIRECTIONS

In this research, very rare relationships in the literature have been tried to figure out. Additionally, the research sample was chosen the expatriates in order to reveal the importance of cultural intelligence to overcome the existing cultural barriers in the host country of Turkey. In the future, the sample should be expanded to refugees and immigrants in the host countries around the world. Furthermore, to adapt to a new culture, beside cultural intelligence, linguistic intelligence should be analyzed.

Moreover, in the future cultural and linguistic intelligence should be analyzed in a way that pointing out the relationships with other types of performances like, contextual performance, creative and innovative performance.

CONCLUSION

During the whole of this chapter, so as to put forth an implication of breaking down the cultural barriers, an important tool, cultural intelligence and its correlates are analyzed. This has been done by conducting an empirical research among expatriates working at the marketing department of multinational companies operating in Turkey. Expatriates were thought to be an appropriate sample, and at the end, it has been proved they were. It is because, since they are away from their original country, they represent employees in case of facing difficulties when adapting to a new culture. In this chapter, to solve cultural difference based work problems, cultural intelligence was found to be an effective capability.

In this chapter, many critical results were introduced to the literature. According to the results obtained from the research, it has been revealed that cultural intelligence has a negative relationship with job burnout. Therefore, burnout syndromes among expatriates can be eliminated by high cultural intelligence. This is because; expatriates with high cultural intelligence feel less exhausted emotionally and less depersonalized at work. After analyzing the sub dimensions of both cultural intelligence and burnout, it has been understood that, especially metacognitive intelligence decreases emotional exhaustion more than other type of cultural intelligence dimensions. When expatriates are more capable in adapting new culture by understanding features of new culture, they feel less exhausted. Additionally, behavioral intelligence is the component, which has the biggest negative correlation with depersonalization dimension of burnout. Expatriates, who behave in an appropriate way in the host countries, for example proper

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greeting, smiling, shaking hands, etc., are less depersonalized. And again expatriates, who have high metacognitive intelligence, are better at feelings of personal accomplishment.

When the current results are compared with the previous ones in the literature, it is observed that, Ang, et al. (2007) also found significant relationships between metacognitive (r= 0.46; p<0.01) and behavioral intelligence (r= 0.37; p<0.01) with task performance. These correlations are slightly stronger than the results obtained in this study. Present study's difference is that, Ang et al. (2007) didn't find significant correlations between cognitive and behavioral intelligence with task performance, whereas they exist in this research. On the contrary Wu and Ang (2011) found correlations akin to the ones obtained in this research. Furthermore, Lee and Sukoco (2010) found that cultural intelligence needed to be mediated by cultural adjustment and cultural effectiveness in order to affect performance of expatriates. Besides, Bakker, Demerouti and Verbeke (2004) found similar but slighter correlations with burnout and task performance.

To sum up, in today's global world, each day, thousands of employees are sent from origin countries to host countries, facing cultural and linguistic barriers. Throughout this chapter, it is emphasized that these barriers may lead to burnout and expatriates should use their cultural intelligence to overcome both burnout and cultural barriers.

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KEY TERMS AND DEFINITIONS

Cultural Intelligence: The capability of understanding and interpreting cultural differences in order to adapt to a new culture.

Depersonalization: Behaving cynical and taking individuals around impersonal and acting like they are not exactly human beings.

Exhaustion: Feeling of lost energy and physical and psychological resources due to stress.

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Expatriate: Employees who live and work at host countries, generally for a time period between two and seven years.

Job Burnout: Losing mental and emotional debility to perform well, due to stressors faced at work.

Task Performance: A type of job performance that relates to completing tasks and duties written in the formal job description.

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Chapter 44
Relationships Between Mental Workload, Burnout, and Job Performance:
A Research Among Academicians

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ABSTRACT

Mental workload is a popular topic for ergonomics, psychology, and organizational behavior-related studies. Difficulties and differences in defining and measurement of mental workload engage the attention of scholars to the concept. Furthermore, the importance of mental workload on performance and burn out increases attention to the topic for empirical studies. In this chapter, the authors reveal the relations between mental workload, burnout, and job performance. Data were obtained from 144 academicians in Turkey. Results demonstrated that mental workload has a 1) positive impact on burn out and 2) negative impact on job performance of academicians. Moreover, it was found that burn out and job performance are negatively correlated. Finally, findings reported that there are differences among some demographic variables in accordance with mental workload, burn out, and job performance.

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INTRODUCTION

At the present time, the business work environment is becoming more volatile and competitive. The development of information technologies, rapid changes in organizational structures, changeable customer attitudes are more important for today's organizations. These features of the marketplace direct organizations to be in search of new methods to achieve and maintain sustainable performance. Leadership, employee's favorable work behaviors, technological investments are some of the interesting methods to provide continuity of the organization's existence. Moreover, today's work atmosphere is shaped with several elements of organizational behavior. These elements such as job satisfaction, organizational culture, organizational commitment, empowerment, organizational trust etc. have strong or weak relationships with each other. Furthermore, according to the results of studies in the literature these elements have positive effects on job performance or organizational performance (Akyol, 2014; Campbell et al., 1990; Kirkman & Rosen, 1999; Robbins & Judge, 2011; Spector, 1997; Viswesvaran & Ones, 2000). On the other hand, there exist some elements such as high mental workload, job stress or burnout that result with negative impact on organizational outcomes as productivity loss, reduced performance or lower organizational commitment.

In the last four decades, assessment of the mental workload also takes place in academic studies related with organizational behavior, occupational psychology and ergonomics (Wickens, 2017). Moreover, workload is considered as a major determinant for physical and psychological symptoms (stress, anxiety, sleep problems) occurrence in human's life that catches the scholars' attention to the concept.

In the literature, most part of the workload related empirical studies have been implemented in aviation, transportation, automation related samples (Demerouti et al., 2019; Keser & Yılmaz, 2014; Lee et al., 2015). In this study it is aimed to analyze high-education employees' mental workload, burnout and performance relations to fill the gap about academicians related studies based on mental workload.

It is well known that being an academician needs to show cognitive effort and attention in the work environment (Borghini et al, 2014). Academicians have a multitasking work structure. In addition to teaching courses in their professional areas, they have the duty of conducting academic researches and making the result of these researches useful publications. They also take on administrative duties in various positions in university. For research purposes academicians need to make long hours of search and reading. Moreover, they have to maintain a balance not only between all tasks but also work and life. Therefore, an academician's mental workload issue and circumstances of this subject are worth to investigate. For this reason, in this book chapter it is targeted to measure mental workload level of academicians. It is also aimed to investigate the differences of mental workload, burn out and performance accordance to the demographic groups. In the first part, workload, burnout and job performance were identified detailed. Moreover, studies in the literature related to these variables were summarized. In addition to these, academicians related studies were also evaluated reference to the literature. Then, research model, hypothesis and aims of the study were mentioned. Finally, findings were discussed with the perspective of similar results in the literature.

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BACKGROUND

Mental Workload

Mental workload concept goes back to the Cognitive Load Theory (Sweller, Merrienboer &Paas, 1998) that deals with the relations between human mind and its limitations (Wickens, 2008). Accordance to the theory, if human is overloaded or low loaded, learning new things or performing tasks are influenced negatively (Longo, 2018). In this context, Hart (2006) identified mental workload as the adaptation and interaction between work requirements and employee's perception, talents, abilities and emotions. For this reason, if two person perform the same tasks but the outputs are different, mental workload may be evaluated one of the reason of performance deficit (Vidulich & Tsang,2012). On the other side, amount of the information while performing a task is also related to mental workload. Furthermore, information memory capabilities may influence the balance between task demands and cognitive resources (Parasuraman, Sheridan & Wickens, 2008). Comparably, O'Donnel and Eggemeier (1986) stated that mental workload is a portion of employee's limited mental capacity which is required for balancing tasks' supply and demand. Colle and Reid (1999) also defined that mental workload is considered as the average level of mental work. Otherwise, when job demand is covered with time pressure and task complexity, perception of the workload increases (Young et al, 2015). In a such case, mental workload related strains like stress generally impact human behaviors (Schlegel, 1993).

In literature, Spector (1997) classified workload in two general aspects as: qualitative workload and quantitative workload. Qualitative workload is related with difficulty of tasks in physical and mental perspective. Qualitative workload related time pressure, precipitance and multi tasks cause stress and burnout that impact human's life negatively (Schmoldt et al,1994). Otherwise, quantitative workload also defines as the amount of completed tasks by employees (Che et al,2017). On the other hand, Vidulich and Tsang (2012) expressed that mental workload is comprised of exogenous task demands and endogenous supplies of resources. Task priority, task difficulty, situational contingencies are classified under exogenous task demands while updating, perceiving memory, decision making, planning and processing is related with endogenous factors (Vidulich&Tsang, 2012). Moreover, workload is evaluated as a cumulative result of different demands for the job. Therefore, it is hard to identify it shortly (Cain, 2007). In addition to these explanations, mental workload is connected with three main dimensions as: characteristics of the tasks, employee's skills and abilities and environmental features of the workplace and the organization (Young et al., 2015). Cognitive demands for doing tasks also trigger mental workload perception of employees. In this context, mental workload is considered with the complexity of the tasks that are required to perform for daily activities (Young et al., 2015). Furthermore, Vidulich and Tsang (2012) described workload as an interaction between employee's capacity and task requirements. Deviations between structure of the required tasks and human's capabilities affect the occurrence of the workload. In such a case, if there is not a balance between task demands and employee capacity, mental workload comes to exist.

Finally, Longo (2018) defined that cognitive load is generally preferred to measure human's mental workload. Besides, mental workload assessment is important in today's human-machine interacted work environment to provide effectiveness. (Ortiz-Solis et al,2018). For this reason, human factor is an important issue for the betterment of work's sustainability (Soto et al, 2016). In this context, mental workload needs to be evaluated in some periods to prevent unexpected job outcomes for minimizing risk factors. Longo (2018) also stated that mental workload can be measured in three types as: self-assessment measures

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(subjective ratings-self reports), task performance measures and physiological measures. It is often uses self-report measures to assess perception about workload of employees. Moreover, Longo (2018) pointed out that subjective measures are easy to obtain and analyze data's for evaluating mental workload. For these reasons, in this chapter it was also used subjective ratings to measure mental workload.

Understanding the Burnout

Burnout is one of the most important concept of employee perception related studies. Burnout was firstly mentioned in organizational behavior literature by Freudenberger (1974) and Maslach (1976). According to the scholars, main characteristics of burnout are listed as an overwhelming exhaustion; feelings of frustration, anger, and cynicism; and a sense of ineffectiveness and failure (Maslach & Goldberg, 1998). Besides, burnout is generally defined as a state of physical, emotional and mental exhaustion that contains loss of energy, idealism, perspective and purpose, and causes constant stress, hopelessness, helplessness and trapped situation (Pines & Aronson, 1988).

Maslach and Jackson (1981) explained the burnout syndrome in three stages as; emotional exhaustion, depersonalization and reduced personal accomplishment. First one is defined as increased feelings of emotional exhaustion such as emotional resources of person are depleted. Sometimes, work overload or personal conflicts at work may cause such results. This component is basic stress dimension of burnout. Then, negative and cynical attitudes and feelings are developed to other people in contact. This situation is also called interpersonal dimension of burnout and often includes loss of idealism. Last aspect is feeling unhappy and dissatisfied about the job accomplishments and contains inability to cope with demands of job. This situation represents the self-evaluation dimension of burnout (Maslach & Goldberg, 1998). In summary, the principal dimensions of job burnout are listed as: stress component (emotional exhaustion), interpersonal relations (depersonalization), and self-evaluation (personal accomplishment) (Kim, Shin, & Umbreit, 2007).

According to Demerouti and colleagues (2002) burnout may be found in any occupational context and seen both within and outside the human services. Early theories of burnout focused mainly on work-related factors; however recent researchers explain that environmental and individual factors also have an effect on burn out syndrome (Çiçek Sağlam, 2011; Demerouti et al., 2019; Gezer et al., 2009; Kim et al., 2007; Maslach&Goldberg, 1998).

Burnout often occurs as a consequence of a complicated interaction between individual characteristics and factors in the work environment (Kokkinos, 2007). Some existing studies reveal out that causes of burnout with a focus on the work environment implying role stressors, organizational structures, and job characteristics (Kim et al., 2007). It also seems important to take into account individual characteristics in analyzing the relationships between burnout and job performance (Lazaro, Shinn, & Robinson, 1984). In other words, what is stressful for one may not be stressful for another (Kim et al., 2007).

Burnout syndrome has different outcomes than short-term effects of strain. Mainly, burnout develops after repeated, prolonged and unsuccessful confrontations of undesirable working conditions (Demerouti vd., 2002). According to Karabay, Tezergil and Köse (2014) initiators of burnout syndrome among people are mainly work related stress factors. These factors trigger the existence of burnout situations at work and then create damaging circumstances. Besides, burn out related these factors also influence performance of employees at work and result with low productivity.

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Job Performance

Performance is considered as a concept that is fulfilled in the direction of completing the task and accomplishing the purpose in a way to meet the pre-determined criteria within the framework of the task (Pugh, 1991). Employee's job performance is generally defined as an effort of individual that serves for organizational performance (Akyol, 2014). According to Campbell and colleagues (1990), efforts contribute organizational goals through the appraisal of an employee's performance on job-related attitudes and outcomes in comparison with her/his colleagues. In today's business environment, organizations need highly performing employees: i) to achieve their goals ii) to sustain daily activities, iii) to have a competitive advantage (Sonnentag & Frese, 2002). In this context, job performance is evaluated as a key factor for researchers as well as for organizations, managers and employees. In order for organizations to get their corporate goals and gain competitive advantage (Soto et al, 2018) in the industry they are in, they need high performance employees (Realyvásquez et al,2015). High business performance is also important for employees as well as for organizations. Completing their duties as required and show high success in their work, as a source of pride, skill and satisfaction for employees; is the basic condition of many work results that are important for individuals such as job performance, higher income, better career and social reputation (Sonnentag & Frese, 2002).

In competitive working environment, individuals have a big portion in the success of organizations. In some cases, if employees succeed in achieving success through effective and efficient work, rewarding them may be necessary to ensure continuity of performance. On the other hand, it is important to motivate employees who do not have the same performance as their colleagues (Erdoğan, 2011).

According to Borman and Motowidlo (1993), there are two main components of business performance which are called as task performance and contextual performance. The task performance deals with the main technical processes or on going activities in a company. For example; production operations, delivery operations of finished goods, material supplying, and relationships with subordinates or service operations. On the other side, contextual performance includes behaviors that develop and contribute organizational culture and climate which affect employees who carry out daily activities in company. It includes trust building, calming hostility and conflict situations (Bang & Reio, 2017).

Shortly, performance is a concept about achieving tasks and responsibilities that contribute to the manufacture or service production or management duties. As a multidimensional concept, employee performance includes both accomplishment of task and positive organizational citizenship behavior that contains avoiding counterproductive behaviors for a good performance outcome (Robbins & Judge, 2011; Viswesvaran & Ones, 2000).

In addition to the upper explanations, job performance is considered as one of the most important organizational outcome incorporated with burnout concept (Brandes et al., 2008; Wright & Cropanzano, 1998). In literature, there are some researches which investigate the impact of burnout on performance. Actually, results of burnout have serious impacts on organizational performance. Reference to the literature, burnout causes higher turnover and absenteeism, diminished organizational commitment, health problems, poor quality etc (Gandi et al., 2011; Kar&Suar, 2014; Keratepe&Uludağ, 2008; Lazaro et al., 1984; Liu&Lo, 2018). Some job characteristics also trigger burnout syndrome such as workload, time pressure, lack of support and control, autonomy (Keser & Yılmaz, 2014). Wright and Bonett (1997) also found that emotional exhaustion leads to subsequent poor performance. According to Maslach and Jackson (1981), as a consequence of burnout syndrome, a person feels himself unhappy and unsatisfied due to the his/her job accomplishment.

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Studies About Mental Workload, Burnout and Job Performance

Mental workload get attention for being a significant occupational risk factor in the workplace that leads to loss of performance, productivity, welfare and well-being (Keser&Yılmaz, 2014; Liu&Lo, 2018). Moreover, high workload negatively impacts job satisfaction that causes burnout, health problems and intention to quit (Rubio-Valdehita et al,2017). Hancock and Caird (1993) also emphasized that mental workload is an indicator of job performance. However, he noticed that performance failure also may rises up the perception of the workload. On the other side, it was expressed that mental workload is connected with mental fatigue (Demerouti et al., 2002). Overload and fatigue speed up to make errors and failures in the job (Brookhuis & de Waar, 2010). Moreover, it is often believed that when mental workload increases, control variability and errors pick up but individual performance tends to decrease (Huey and Wickens, 1993). Especially, when time pressure merges with capacity problems, variations in the performance enhances (Wickens, 2017). All in all, when mental workload is one of the important elements of employee performance.

Studies About Burnout, Personal Characteristics and Job Performance

In recent years, researchers pay attention to antecedents and consequences of burnout syndrome. Numerous studies have been made during the past decades. Regarding burnout there are studies focused on different populations such as doctors (Turgut et al., 2016), nurses (Gandi et al., 2011) and other health staff (Portoghese et al., 2014; Yıldırım & İçerli, 2010), hotel staff (Keratepe & Uludag, 2008; Kim vd., 2007), insurance company employees (Schaufeli & Bakker, 2004), call-center employees (Keser & Yılmaz, 2014), teachers (Çapri, 2006; İnce & Şahin, 2015; Kokkinos, 2007) academicians (Ardıç, 2008; Çavuş, Gök, & Kurtay, 2007; Gezer, Yenel, & Şahan, 2009; Toker, 2011) and students (Schaufeli et al.; Tümkaya, Çam, & Çavuşoğlu, 2009).

In early studies, Lazaro and colleagues (1984), investigated the relationship of burnout and job performance. Moreover, scholars also worked on individual characteristics in a sample of child care workers in residential programs for youths. According to the findings, burnout was associated with job performance; however individual characteristics were unrelated to most of the indicators of burnout and job performance. Keratepe and Uludağ (2008) also analysed the effect of burnout on job performance. Results showed that only reduced personal accomplishment has a significant negative effect on job performance.

Kokkinos (2007), analyzed the relationships between burnout, personality characteristics and job stressors in primary school teachers and revealed out that relative contribution of these variables on the three dimensions of burnout – emotional exhaustion, depersonalization and reduced personal accomplishment. Furthermore, Turgut and colleagues (2016) searched for correlation between burnout and years of residency among residents. Scholars reported that burnout syndrome is a common problem during residency period and there are significant relationships between some dimensions of burnout and years of residency.

Lee, An and Noh (2015) made a research among 230 flight attendants of a global airline company in South Korea. Scholars aimed to find out the impacts of emotional display rules on the emotional labor strategies, burnout and work performance. They suggested important outcomes to improve performance and reduce burnout. Another study was performed with airline pilots to investigate work characteristics

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and outcomes which are related to burnout of this occupation. First of all, scholars pointed out that high amount of pilots (%40) were suffering from burnout syndrome that effects negatively pilots' happiness with life. Scholars also highlighted the significance of psychosocial factors in the existence of the burnout syndrome (Demerouti, Veldhuis, Coombes, & Hunter, 2019).

Furthermore, Mo and Shi (2017) performed a research in a pharmaceutical retail chain company. Their study was consisted of 45 team leaders and 247 employees to measure the impact of ethical leadership on employee burnout, deviant behavior and task performance. As a result, researchers found significantly positive relationships between ethical leadership and employee burnout, deviant behavior and task performance. Moreover, Virgolino, Coelho and Ribeiro (2017) analyzed the impact of burnout syndrome on the employee's individual performance with using survey method to obtain data from 407 employees. Interestingly, the first two dimensions of burnout as emotional exhaustion and depersonalization on individual performance were not significant. On the other hand, there was a negative relationship between the reduced personal accomplishment and individual performance. Findings of the study indicated that when reduced personal accomplishment increases, individual performance also decreases.

Nevertheless, burnout and performance relationship with career path gap was investigated in another study with the participation of 210 employees from four different technology companies. According to results, burnout level was the lowest degree when employee experiences career path fit. However, performance level was also the lowest degree among employees who were currently on the technical career path but would prefer the managerial path (Biron & Eshed, 2017).

Studies Among Academicians and Students Regarding Academic Burnout

In literature, there are plenty of researches from different populations regarding burnout syndrome. Different sectors with various reasons create stress, emotional fluctuations and depression on employees. Therefore, researchers aim to introduce burnout concept and its relationship with other organizational behavior elements or company specific outcomes from different point of view. One of these areas is academic population. There are many papers discussing burnout of academicians as calling the subjects as "academic burnout". On the other hand, "academic burnout" is searched among students ranging from college to postgraduate degree. This section refers to some of mentioned studies.

Academicians have multi-tasks in the workplace that sometimes lead to workload. Course preparation, article writing, consultation of students, international coordination about cooperation, committee tasks, teaching, administrative duties, invigilation are some of academicians' daily works in the workplace (Mustapha, 2013; Porter &Umbach,2000). Rahayu and colleagues (2012) also pointed out that lecturers' tasks are comprised of education, teaching, consultation, mentoring and academic working. For this reason, it was emphasized that mental intensity and workload is generally observed because of the job's nature. In addition to these duties, in some countries as Turkey, period of courses for one lecturer is on the average of standard values. As a result when course period increases load of academician tends to pick up. Moreover, student number for one academician is also high in Turkey. Consultancy duties have also major role on overloading of academicians. And finally, administrative jobs related faculties impact academicians workload. Lack of administrative staff play a significant role in this situation. There is a common problem in Turkey about employment policies and appointments in administrative staff. For this reason, it is assumed that mental workload of academicians in Turkey is high. In this context, in this study it is focused on academicians and mental workload related literature is summarized below.

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Ardıç (2008), aimed i) to determine burnout levels of academic staff at Gaziosmanpaşa University in Turkey and ii) to reveal out the relationship between burnout levels and some variables. In the study with the participation of 202 academicians, some personal characteristics and their impact on burnout were analyzed. Moreover, in the light of the data obtained from the research, it was tried to offer solution suggestions to prevent burnout of academic staff. Iraz and Ganiyusufoğlu (2011) also conducted a study with 151 academicians to examine perceptions of burnout sub-dimensions in terms of gender, age, marital status, seniority and title. Similar studies were performed to determine whether burnout levels of academic staff differ according to some socio-demographic variables (Budak & Sürgevil, 2005; Çiçek Sağlam, 2011; Gezer et al., 2009; Toker, 2011). Interestingly, emotional exhaustion score of the teaching staff varied significantly by geographic region. On the other hand, personal achievement scores differed significantly in terms of age, administrative task, academic level and geographical region. There was no significant difference between the depersonalization scores and the personal and professional characteristics of the lecturers (Gezer et al., 2009). The results showed that research assistants had higher scores on emotional exhaustion than professors. Besides, research assistants had higher levels of desensitization than associate professors and lower personal performance scores than other academicians. However, marital status and age of demographic variables had a significant relationship with occupational burnout, gender did not have a significant relationship with burnout (Toker, 2011).

Naktiyok and Kaygın (2012) investigated the relationships between workaholism and physical, mental and emotional exhaustion. The findings showed that the rise in the level of occupational activity also increases mental, physical and emotional exhaustion. Researchers also performed another study to determine the levels of burnout and job satisfaction of academic staff. They found negative relationship between burnout and job satisfaction (Naktiyok & Kaygın, 2012). In another study, the burnout levels of the academic staff working in the vocational schools were examined according to some variables by Çavuş and colleagues (2007). Emotional exhaustion and depersonalization scores of the academic staff were low and the personal success score was high. Reference to the results of the study, significant relationships were found between emotional exhaustion and some organizational behavior elements as; administrative task, total course load, job satisfaction and between personal achievement and satisfaction from work. Furthermore, burnout and performance relationship was examined with master students as naming the concepts academic burnout and academic performance. Data from 361 students were analyzed and researchers found significant and negative relationships of emotional exhaustion and depersonalization with student's academic performance. Reference to the findings, when burnout of students increases then learning and performance degree tends to decrease (Rana, 2016). Similar studies realized among students by scholars (Kutsal & Bilge, 2012; Nikodijević, Labrović, & Đoković, 2012; Rostami, et al., 2013). Scholars pointed out that high expectations from students cause stress and burnout and resulted with less concentration, decreased attention and low grade levels.

METHODOLOGY

Gopher and Donchin (1986) noticed that there is not a unique and universal method for measurement of workload. Wierwille and Casali (1983) also explained that if workload is not able to measure easily, it should be focused on its impact on individual's behaviors and psychological strains. Therefore, evaluation of mental workload of academicians is preferred to measure with individual outcomes.

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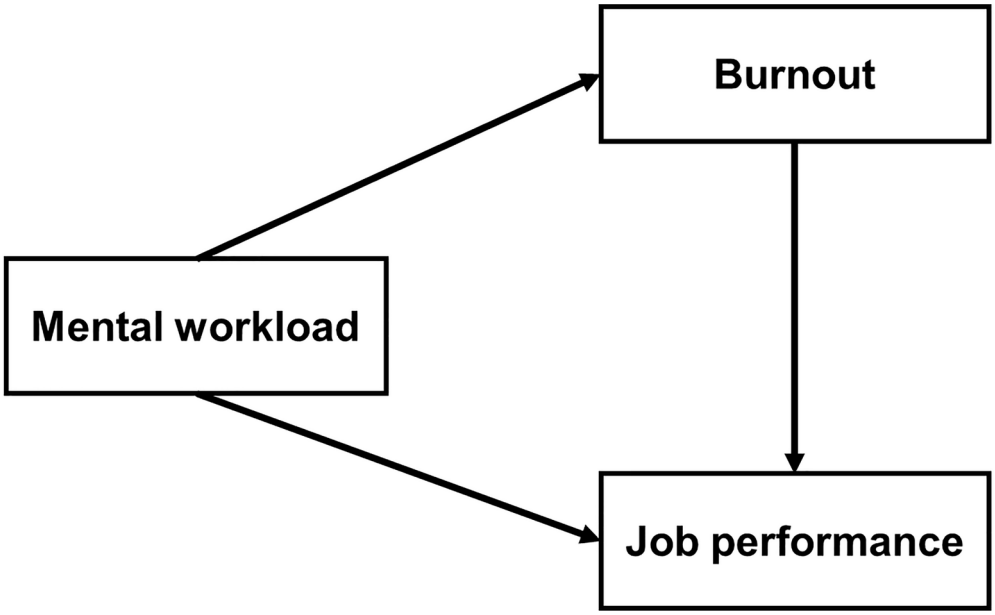
Reference to the summarized studies in the first part, research model and methodology designed in detail to find out the relationship between mental workload, burnout and job performance of academicians. Shortly, in this book chapter it is aimed to explain these relationships between variables. For this purpose, research model of study is shown below in Figure 1.

Figure 1. Research model



The sample of this study is comprised of academicians in Turkey, city of Edirne. Respondents of sample comes exist from Trakya University's academicians. Trakya University was established as a state university in the northwest of Turkey and has a growing profile as a regional leader in the Balkans in higher education, research and technology. It has a multitasking structure with different disciplines and there are 12 faculties, 5 institutes, 6 collages and 10 vocational schools, 30 research and application centers. There exist almost 1700 academicians from various branches. Therefore, Trakya University offers an opportunity with its academic staff diversification in order to research about mental workload, burnout and job performance. It was also preferred to use convenience sampling method for the study and the questionnaires sent to public university academician. Ease of distribution and collection of questionnaires, cost and schedule advantage impact to choose of this public university for the empirical study. Population of this research becomes from academicians who are research assistant, lecturer and faculty members, which are assistant professor, associated professor or professor. Academician numbers were obtained from university web-site and activity report. It was stated that there was 1804 academician in the university by May 2019. According to the sample size formulation (Mendenhall, Sincich& Boundreau, 1996) with error margin 0.10 it was calculated that 96 questionnaires is suitable for the study. Error margin preferred as 0.10 due to the academicians sometimes may not intended to participate about work related studies. Because they have some hesitations that questionnaire answers may be analyzed by

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managers. 250 questionnaires distributed to the faculties in line with the ratio of academicians in each department. Finally, it was obtained 144 valid questionnaires to use in statistical analyses.

Survey items for each variable derived from literature. In this book chapter, it was used CarMen-Q Questionaire (Rubio-Valdehita et al., 2017) to measure perception of mental workload cognitive demands with 10 items. Moreover, Maslach Burnout Scale (Maslach & Jackson, 1981) was preferred to measure emotional exhaustion with 9 items. Finally, Employee Performance Scale (Kirkman & Rosen, 1999) was used to assess job performance with 7 items. All items within the survey were scored on a 5-point Likert scale with an agree/disagree continuum (1= strongly disagree, 2= disagree, 3= neither agree nor disagree, 4= agree, 5= strongly agree). Survey also had some demographical items such as gender, age, job experience and academic position of respondents.

Reference to the literature and research model hypotheses of this study are listed below as;

H1: Mental workload (cognitive demands) has a significant impact on burnout (emotional exhaustion).
H2: Mental workload (cognitive demands) has a significant impact on job performance.
H3: Burnout (emotional exhaustion) has a significant impact on job performance.

Data gathered from 144 academicians were analyzed with IBM SPSS 21.00 Statistical Program. First part of survey includes some descriptive information of respondents. According to the descriptive analyses, information about respondents is shown in Table 1 below.

Table 1. Descriptive information

Descriptive information	Frequency	Percent (%)
Gender		
Female	64	44,4
Male	80	55,6
Age		
26-35	62	43,1
36-45	52	36,1
>45	30	20,8
Total job experience		
<3 years	8	5,6
3-5 years	12	8,3
6-8 years	28	19,4
9-11 years	30	20,8
>11 years	66	45,8
Current workplace experience		
<3 years	36	25
3-5 years	28	19,4
6-8 years	32	22,2
9-11 years	18	12,5
>11 years	30	20,8
Academic rank		
Research assistant	20	13,9
Lecturer	30	20,8
Assistant professor	42	29,2
Associated professor	16	11,1
Professor	10	6,9
No answer	26	18,1

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Second, third and fourth parts of survey have mental workload, burnout and job performance items respectively. For each variable, validity and reliability analyses were made. Moreover, construct validity of scales was tested with Factor Analyses. Findings reported that all scales have good Kaiser-Meyer-Olkin and Bartlett values that show sample size is suitable and statistically significant for Factor Analyses. Thereby, mental workload scale explained %64.842 of total variance. No items were deleted and in total 10 items presented the scale. Cronbach's alpha value of scale was 0.937. Burnout scale also explained %65.99 of total variance with 9 items in total. According to reliability analysis Cronbach's alpha value was found as 0.930. Job performance scale explained %76.295 of total variance with 7 items. Cronbach's alpha value was obtained as 0.746 of this scale.

When the average values of each variable in the research model were examined, the average value of the mental workload variable was obtained as 4.1444. In addition to this, the average value of the burnout variable was calculated as 2.4630 and the average value of the job performance variable was achieved as 3.9325. Reference to the findings, it is observed that academicians' mental workload and job performance values are around 4.00 and burnout level is under the average value of 3.00.

In the next step, the relationships between variables were examined. The relationships between variables in the study were investigated by Pearson Correlation Analyses. Findings showed that there is a poor and positive correlation between mental workload and burnout while there is a poor and negative correlation between mental workload and job performance. On the other hand, there is a medium-level and negative correlation between burnout and job performance. It is important to note that all correlation values were statistically significant.

Table 2. Results of Pearson correlation analysis

	Mental workload	Burnout	Job performance
Mental workload	1	0,242**	-0,195*
Burnout		1	-0,381**
Job performance			1

**Correlation is significant at the 0,01 level (2-tailed)

*Correlation is significant at the 0,05 level (2-tailed)

In order to test first hypothesis "Mental workload (cognitive demands) has a significant impact on burnout (emotional exhaustion)" regression analysis was performed. According to the results of regression analysis, the effect of mental workload on burnout was found statistically significant. ($p = 0,003<0,05$). Moreover, it was obtained that just % 5.2 of the change in burnout levels of academicians was explained by mental workload. Moreover, positive impact coefficient was similar with correlation coefficient (Beta) as 0.242. In accordance with the findings, H_1 hypothesis was accepted.

Reference to the regression analysis to test the second hypothesis, the effect of mental workload on job performance was found statistically significant ($p=0,019<0,05$). Accordingly, the hypothesis "Mental workload (cognitive demands) has a significant impact on job performance" was accepted. Moreover, negative impact coefficient is similar with correlation coefficient (Beta) as -0.195.

According to regression analysis that performed for the third hypothesis "Burnout (emotional exhaustion) has a significant impact on job performance" and burnout explained %13.9 of the change in job

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performance level (p=0,000<0,005). Besides, negative impact coefficient was similar with correlation coefficient (Beta) as – 0,381. By this, H_3 hypothesis was also accepted.

It was also used Independent T-Tests and One Way Analysis of Variance Tests (Anova) to find out any difference on research variables for gender, age, academic rank, total job experience and current job experience. According to the findings, there was no significant difference for gender on mental workload, burnout and job performance variable. Secondly, Anova analysis for age groups of academicians was made. There was also no significant difference for age groups on research variables. Third control variable was the academic rank of respondents for difference analysis. Academic rank referred to the academic degree of university staff and includes research assistant, lecturer, assistant professor, associated professor and professor (p<0,05). For burnout, there was difference between associate professor and professor and burnout level of professor was more than associate professor (Burnout; Aveasso. prof.=2,0833, Aveprof.=3,1556). Also for job performance it was found several statistically significant differences (p<0,05). There was difference between assistant professor and other groups and the average value of assistant professor was more than other groups (JobPerformance; Aveasst.prof.=4,1905, Averes.ast.=3,6714, Aveprof.=3,3714). Furthermore, current workplace experience was also asked to the respondents. For this control variable there was no statistically significant difference for both mental workload and burnout (p>0,05), on the other hand, for job performance there was difference between <3 years with 3-5 years and 6-8 years' groups; between >11 years' group with 3-5 years and 6-8 years' groups (p<0,05). Average values of <3 years and >11 years' groups were less than mentioned groups (JobPerformance.; Ave<3=3,6746, Ave3-5=4,2653, Ave6-8= 4,0982, Ave>11=3,6476).

Another and last control variable was the total job experience of academicians. For mental workload variable there was significant difference between <3 years and the other groups (3-5 years, 6-8 years, 9-11 years and >11 years groups; p<0,05). Average value of <3 years group was found less than the other groups (MentalWL.; Ave<3=2,6750, Ave3-5=3,9667, Ave6-8=4,0573, Ave9-11=4,3133, Ave>11=4,3152). For burnout, <3 years' group had significant difference with other groups (3-5 years, 6-8 years' groups; p<0,05) and average value of <3 years' group was less than these groups (Burnout; Ave<3=1,4444, Ave3-5=3,0370, Ave6-8=3,0238). Also difference was found between 6-8 years and >11 years' group (p<0,05; (Burnout; Ave6-8=3,0238, Ave>11=2,2727). Lastly, for job performance there were differences between groups of <3 years and the other groups (9-11 years and >11 years' groups; p<0,05). Average value of <3 tears group is less than other two groups (Job Perf.; Ave<3=3,2143, Ave9-11=4,1429, Ave>11=3,9870).

FUTURE RESEARCH DIRECTIONS

In this chapter, it was aimed to demonstrate the relationships between perceived mental workload and i) burn out and ii) job performance. Moreover, it was tested the relationship between burnout and job performance. It was also mentioned about differences among demographic variables accordance with mental workload, burnout and job performance. In future researches, it is advised to use other sampling methods and comprehensive sample size. Besides, in coming studies testing relations with stepwise regression analysis will explain better results.

As this study was performed among academicians, in order to generalize results of this study for the other organizations, same study should be made in the future as including respondents from different industries. Moreover, it will be beneficial to repeat this research for other organizational behavior subjects.

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Limitations

Selection of only one university is one of the main limitation of this study. Besides, convenience sampling method may be sometimes considered as a limitation. Sample size is also required to rise up in next studies.

Practical Implications

According to findings, it was revealed out that mental workload has a positive and significant impact on burnout (β=0,242) while has negative and significant impact on job performance (β= -0,195). Furthermore, it was found that burnout also affect job performance negatively (β= -0,381). Results demonstrate that H_1, H_2 and H_3 were accepted.

Moreover, it was deduced that there is not a significant differences between age and gender groups in the basic workload, burnout and job performance. Likewise, it was seen that burnout level rise up with the increase of academic rank. Assistant professors' job performance is also higher than other groups. Besides, it was revealed out that increase of job experience raise the mental workload of academicians. Finally, it was found that academicians who have less than 3 years of experience have less burnout and job performance than other groups. Reference to the upper findings, it is important to emphasize some issues about academicians in Turkey.

Generally, raise of academic rank triggers the administrative duties of academicians. Moreover, collateral duties increase with the experience and rise of academic title. In addition to that, consultancy for firms or coordinator roles in projects affect perception of workload of academicians. It is also significant to point out that academicians sometimes need to have duties as mentioned previous explanations to have extra incomes. Academician salary level is low in Turkey than other countries. For this reason, extra loads (teaching in private universities, special courses, weekend jobs, consultancy etc.) may trigger the perception of workload. Furthermore, competition in the academic life also have a major role on working of academicians. Besides, staff policies and condensation in universities also impress academicians. On the other side, new regulations for being an associate professor force assistant professors to study harder. Due to the things have changed for being an associate professor, assistant professors need to work intensively that may impress physical and mental workload. Therefore, it is estimated that performance of assistant professors may have higher than other groups.

CONCLUSION

Mental workload, burnout and job performance are main topics of this study and our research area. Literature on these subjects is quite fruitful and presents lots of research results. There are plenty of researches that investigate separately or together of some combinations of workload, burnout or job performance (as work outcomes, innovation performance, efficiency etc.). Specially, mental workload subject is a developing concept in social sciences. Moreover, these studies are lack of analysis about control variables such as age, gender, job experience, academic positions or university status.

Consequently, this study examined the relationships between mental workload, burnout and job performance. Accordance to the findings, statistically significant relationships were found between the related variables. Moreover, the impact of mental workload on burnout and also burnout's effect on

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job performance was confirmed. Besides, the results showed that mental workload has an effect on job performance. In this respect, all hypotheses of the study were accepted.

Findings of this study was found similar to the results of other studies. Naktiyok and Karabey (2005) reported that the rising of workaholic level increases mental, physical and emotional burnout. Liu and Lo (2018) confirmed relationship between workload and job burnout. Scholars also analyzed relationships of job burnout with job satisfaction and turnover intention which effects job performance. It was obtained that job burnout has negative correlation with job satisfaction and positive correlation with turnover intention. On the other side, Demerouti and colleagues (2002), examined short-term consequences of mental strain and burnout relationship. In their study, mental strain consists of mental fatigue, stress sensation, satiation and monotony. Moreover, scholars classified burnout as exhaustion and disengagement dimensions. They found that each burnout dimension was related to short-term consequences of mental strain. Similarly, Portoghese and colleagues (2014) found positive interactions between workload and exhaustion.

According to Maslach and Jackson (1981) and Arabacı (2010), if employees display symptoms of burnout, they reduce motivation for work and they stop making an effort altogether, hence decreasing their feelings of job competence and productivity (Kar & Suar, 2014; Siu, Cooper, & Phillips, 2014). Ahsan and colleagues (2009) also found that workload pressure, role ambiguity, performance pressure are related with academicians' job stress and dissatisfaction. Kamel (2009) stated that role overload of academicians leads job stress in the workplace. Furthermore, Panatik and colleagues (2012) revealed out that job demand of academicians positively related with turnover intention. Mustapha (2013) also expressed that huge job demands can lead academicians to burn out and intention to quit. Nevertheless, Mustapha (2013) found that there is a negative relationship between workload and job satisfaction of academicians. Besides, Shahzad and colleagues (2010) obtained that there is a negative relationship between workload and job satisfaction on lecturers. In another study with the participation of 294 employees it was found that burnout is related with mental strain. It was also reported that exhaustion is positively related with fatigue (Demeroutie et al, 2002).Finally, Rahayu and colleagues (2012) stated that mental components related health problems impact individual's performance. Otherwise, it was stated that to increase work performance and teaching abilities it is required to provide good workplace conditions and social support that lead better well-being of academicians.

Moreover, it seems valuable to control for individual characteristics in analyzing the relationships of burnout and job performance (Lazaro vd., 1984). Another result of the study is related to demographic variables. Possible differences in research variables were investigated in terms of gender, age group, work experience and academic titles. It was found no significant difference between male and female academicians and also among age groups for three research variables. Also Toker (2011) implied that gender did not have a significant impact on burnout. However, regarding academic degree, there were statistically significant differences for burnout and job performance. Also, for job performance variable according to current and total workplace experience groups, it was found significant differences. Khan and colleagues (2015) also obtained that young academicians had the highest burnout level. Moreover, it was stated that they found some differences about burnout based on age and experience groups of academicians however they could not find any significant difference based on gender and marital status about burnout.

Finally, it is advised that; workload related regulations need to be revised. Academicians' working conditions and income levels are also required to regulate detailed. Moreover, job related loads should

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be distributed to the academicians more balanced. Academicians also should be supported with stress, time management related workshops to minimize individual conflicts.

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Chapter 45
Defective Decision Making:
Beginning Teacher Early Burnout From Catastrophic Career Choices

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ABSTRACT

Teacher burnout as the result of poor career choice and decision making plagues new teachers in the field of education, as well as special education. This chapter introduces theories of moral development and self-efficacy that explain the thought processes of teachers whose expectations in the field do not match the reality of teacher practice. Therefore, their decision making to enter the field contributes to early teacher burnout. Three case studies are described as examples to understand how the psychology of choice determines the factors that result in burnout. The chapter describes how the teachers' decisions relate to the psychology of moral development theory and self-efficacy theory for their career choice. Their behavior and attitude as a teacher relates to their catastrophic choices. The chapter presents suggestions that teachers can implement to make better decisions for their career choice.

INTRODUCTION

Teacher burnout as the result of poor career expectations and decision making plagues new teachers in the field of education (Fernet, Lavigne, Vallerand, & Austin, 2014) especially teachers in special education (Brunsting, Sreckovic, & Lane, 2014). According to Fernet, et al., (2014) the question of people entering a profession with the passion to teach who experience burnout, perhaps as early as the first 1-3 years, may be related not only to their passion, but their perception of what they thought teaching would be for them. This result was not what they expected.

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The purpose of this chapter is to identify the conflict some teachers face and decide teaching is not a viable career path for them. The three individual case studies from the literature (Brownell, Smith, McNellis & Miller, 1997; McCann & Johannessen, 2004; Schaefer, Downey & Clandinin, 2014) explain how their conflict contributes to burnout and decision to leave the profession. Additionally, the purpose of this chapter is to review the research on teacher burnout and those who believe they have a mismatch of career choice. Suggestions are provided how teachers can identify their decision arising in response to their burnout and change their outlook to move to a new career direction.

Teacher conflict has a basis in the literature. Fernet, et al. (2014) addressed the feelings of people who have a passion to teach and pursue the teaching profession because of their passion. When a teacher thinks he or she has decided on the right career path, but becomes frustrated, disappointed and unsure of what to do, their decision results in blaming themselves as a failure which is a symptom of burnout.

BACKGROUND

Teacher Conflict

There are teachers' perceptions regarding factors that contribute to their stress level which cause teacher burnout. Collingsridge (2008) reported that even with passion to teach, teachers are leaving the profession because of a myriad of issues. They are overrun with paper, harassed by the administration, (Makala, Hirvensalo, & Whipp, 2014) and experience isolation (Bardo, 1979; Wong, Ruble, Yu, & McGrew, 2017) interfering with teachers' psychological investment in their job.

Blasé's (1986) qualitative study interviewed teachers who expressed deep feelings of stress that contributed and interfered with their psychological well- being. Examples of these 77 categories or themes were related to negative descriptors of the teacher's experiences in the classroom and association with administration. These included anger, resentment, disgust, distrust, exploited, abused, hostile and irritated. Blasé (1986) also identified elements of a depressive state within the various categories. These factors most frequently stated by teachers included apathy, alienation, loneliness, isolation, discouragement, and disappointment. Another category that expressed the teachers' physical states of stress referred to exhaustion, fatigue, overwork and burned out. One specific teacher example reported by Blasé, (1986) was expressed by this statement:

When I first started teaching I was excited.... I would try all kinds of things to make the class interesting. I was learning, growing myself.... Teaching drains you! I've lost a lot of my enthusiasm for the subject. It's hard to keep up a facade of excitement when so many kids and parents don't give a damn about education.(p. 32)

Fernet, et al (2014) supported the premise of job autonomy and passion for teaching. However, the reality was teachers believing, as a classroom teacher, they have job autonomy and find that there are so many factors that challenge their autonomy (Skaalvik, & Skaalvik, 2017). These factors include an overabundance of paper work, long meetings that are not satisfying, and administration that doesn't understand the child with special needs (Richards, Levesque-Bristol, Templin, & Graber, 2016). Teachers' expectations of their job as a teacher are tarnished. The teacher perceives an inability to perform in spite of the decision to choose education as their career. This perception reinforces the conflict in their

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job expectations. Fernat, et al., (2012) have devised a model that observes teacher autonomy and self-efficacy to counter teacher conflict. Faced with incomplete or erroneous information, beginning teachers often react to a flawed system of decision making causing burnout that impacts their career choice.

Burnout

The terminology associated with burnout, defined as exhaustion, and making overabundance demand on strength or resources was initially developed in the early 1970's by Herbert Freudenberger (1974). This definition at its core was the phenomenon of physical and emotional exhaustion associated with negative attitudes (Helms- Lorenz, Slof, & van de Grift, 2012). Freudenberger (1974) used the framework of institutions and staff members in the hospital environment for originating the definition of burnout. Some of the key researchers on burnout is Maslach, Schaufeil and Leiter (2001) who created a series of three dimensions to explain the conceptualization of how burnout materializes as a psychophysiological effect that changes "an individual's positive, motivational state of fulfillment (p.190). Teacher burnout has evolved over the years with varying definitions from modern researchers, all of which contributes to the existing literature. Maslach and Jackson (1981) presented burnout as having three components. The primary being emotional exhaustion followed by depersonalization and reduced personal accomplishment. Emotional exhaustion (EE) manifests itself as physical deterioration, emotional overburden and a lack of enthusiasm and energy. Depersonalization is (DP) defined as conscience effort to distance and detach from others. The dimension of reduced personal accomplishment (PA) the feeling of being ineffective and hopeless all contribute to the issue of burn out and poor decision making.

Maslach and Jackson (2003) wrote that:"Burnout is a syndrome of emotional exhaustion, depersonalization and reduced personal accomplishment that can occur among individuals who do "people work of some kind." (p.2). Maslach's, et al., (2001) first dimension concept of burnout encompasses the "physical attribute of exhaustion as the central foundation for burnout" (p.190). Exhaustion includes traits of being psychologically tired in addition to being physically tired and emotionally drained (Maslach, Schaufeli, & Leiter, 2001). Seferoğlu, Yıldız, and Yücel, (2014) supported the attribute of exhaustion from Maslach's seminal research based on the "excessive demands" (p. 350) of teachers, but also reinforced other researchers conclusions (Fernet, Genevieve, Vallerand, & Austin, 2012) who has reiterated the difficulty teachers have with job demands. A variety of results addressed the autonomous motivation for the teachers, when they did not believe they had autonomy, they were more inclined to experience burnout (Deci & Ryan, 2012; Wolgast & Fischer, 2017). Burnout is an outcome of teachers' frustrations usually addressing the regular education teacher. However, teachers working with children with special needs also have experiences and expectations that can cause them to face the emotional, physical and psychophysiological effects that cause burnout.

Special education teachers have a definite reason to experience burnout because of the responsibility and the energy they exert to teach children with special needs (Langher, Caputo, & Ricci, 2017). Since a teacher's job, especially teachers in the area of special education, is to develop strong relationships, they have an emotional investment which contributes to their exhaustion as they engage in teaching children in their classroom (Brunsting, Sreckovic, & Lane, 2014). This emotional investment is an integral part of their exhaustion related to burnout (Wong, Ruble, Yu, & McGrew, 2017) and their realization of their career choice not going according to their plan. In addition to exhaustion as a dimension of burnout, Maslach, et al., (2001) also introduced the concept of cynicism.

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The second dimension presented Maslach et al., (2001) that contributes to burnout is the concept of cynicism. Depersonalization related to cynicism "is an attempt to put distance between once self and service recipients by activity ignoring the qualities that make unique and engaging people" (p. 403). Maslach et al., further explained depersonalization, by stating "distancing is such an immediate reaction to exhaustion that a strong relationship from exhaustion to cynicism (depersonalization) is found consistently in burnout research across a wide range of organizational and occupational settings "(Maslach 2001 p.403). Maslach et al., (2001) also explained the result in a work situation with chronic overwhelming demands that contribute to exhaustion or cynicism is likely to erode ones sense of effectiveness" (p.403).

Friedman (2003) reiterated the factors that contribute to burnout but acknowledged teachers' unexpected reality of being inundated with disruptive and non-achieving students. Teachers believed that parents, administration, and other colleagues are complicit in the contribution to burnout. As a result of unexpected expectations, the teachers find themselves in a moral position of conflict between what is real and what are the imagined stories of their career choice (Schaefer & Clandinin, 2011).

Freudenberger (1974) specified physical signs of frequent headaches, sleeplessness, and stomach pains as the contributing factors to a person who is experiencing burn out. An individual who shows the signs of anger and frustration may be due to feeling overwhelmed. Teachers who feel overwhelmed and experience emotional turmoil resulting in crying or yelling shows signs of behavioral burnout.

MAIN FOCUS OF THE CHAPTER

Issues, Controversies, Problems

The Psychological Effects of Burnout and Fear of Decision Making

The behavioral and emotional effects of burnout are the results of a deeper conflict that causes the teacher to exhibit the behaviors. Brown (2012) explained that Bandura's (1997) social cognitive theory was the impetus for concluding that burnout the teachers were experiencing was due to a deeper psychological phenomenon. Dworkin (2001) has acknowledged that research on Maslach's et. al., (2001) three dimensions of burnout, but adds to the research by introducing the aspects of the missing link to burnout as the ability of teachers to cope with their emotional well-being. Maslach, et al.,(2001) explained this inability to cope as feeling of not being worthy, having the fear of watching the children they teach not improve and blaming their children for not accomplishing the work.

Dworkin, (2001) however, views the inability to cope, which leads to burnout as a psychological form of alienation, related to how teachers view their position within the societal structure. He relates their feelings of psychological weakness within a deeper conceptualization of how teachers are treated in society. Dworkin investigated school reform in Texas as it related to teacher burnout. He concluded his investigation by acknowledging that teachers need a strong self-efficacy and the opportunity in the work environment as a teacher to have autonomy in their work situation. The framework for the self-efficacy and decision making opportunities for teachers to address the outcome of burnout is found in theories that are the impetus for understanding teachers' decisions. The theories of Bandura's (1997) self-efficacy and Kohlberg's (1958) seminal work in moral development will be explained to address the understanding of teachers decision making processes as it relates to burnout.

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Theoretical Framework Underlying Burnout

Bandura (1997) has developed the theoretical framework of the phenomenon of self -efficacy as an underlying theory from social cognitive theory. Decisions individuals make according to Bandura (1997) originate from self-efficacy theory into four distinct states. Bandura explained the four states as the impetus for individual's decision-making. Inactive mastery experiences are the first state of our personal authentic experiences whereby individuals tell themselves they will do anything to succeed. Vicarious experiences are the second state whereby the individuals' perceptions of how they view themselves are through the lens of others. The third state verbal persuasion reflects how people see themselves through the conversation manifested from other individuals. The last state is psychological and affective refers to individuals' perception of enhancing their physical status resulting in the reduction of stress levels so that they believe that their physical status is a reflection of their own image. Applying the theoretical framework from Bandura (1997) related to self-efficacy, teachers find themselves in a position of unrealistic self-talk, and a false sense of personal belief resulting in unrealistic career expectations (Leiter,1992).

This decision of career choice becomes unrealistic because of the teachers' feelings of a lack of accomplishment in student achievement, frustration with administration, and self-doubt that contributes to burnout. These factors are evident as explained by Williams and Dikes (2015) who conducted a study focusing on exploring special education teachers "emotional exhaustion, depersonalization and personal accomplishment (Maslach, Schaufeli, & Leiter, 2001) related to ten demographic variables" (p.339) Williams and Dikes (2015) used Maslach *Burnout Inventory – Educators Survey* for their study. Their findings indicated several specific results. Single special education teaches were found to experience higher levels of burnout. Another result of their study indicated that teachers with advanced degrees might experience a higher level of burnout. Findings also indicated that there was a positive correlation between burnout and the length of the teacher's total years of experience. The longer that a teachers stays in the field, the more stress they encounter leading to burnout. Those specific demographic factors are an integral part of teacher's decisions that creates unrealistic career expectations.

Burnout is the outcome of the mismatch in the teacher's decision making, moral and ethical development, and their developmental schema. Kohlberg's (1958) dissertation delves into the idea of " individuals developmental schema which contains such varied elements of orientation; as roles, rules self -image, punishment, approval, sympathy, exchange, and authority." (p. 339). Each of those elements contributes to the decision-making process teachers experience as they formulate their decisions based on the mismatch of unrealistic career expectations. When individuals have difficulty evaluating the event based on his or her own perspective and considers another persons' belief regarding whether the event is considered advantageous or detrimental; the moral decision becomes questionable and the effect on the individual can be detrimental.

Therefore, based on Kohlberg 's (1958) underlying premise for understanding moral decision making related to moral development, teachers may make decisions based on views and opinions of others or a reflection of how they approached decisions as children. The theoretical framework of Bandura's self-efficacy and Kohlberg's moral development regarding decision-making is interrelated within the following case studies. These case studies highlight teacher decision-making and the individual's perception of their self-efficacy regarding their encounters as teachers to decide that they are still experiencing burnout.

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Case Studies Related to Teacher Burnout

This chapter presents studies that reinforce the correlation between self-efficacy and teacher burnout. Supporting the premise of this chapter is to show the relationship of Bandura's theory of self-efficacy and how it applies conceptually to teacher burnout. Bandura (1997) looks at moral decision making from the social cognitive theory whereby adults base their decision making from a sense of self-efficacy. Although the previous consideration in this chapter defines burnout, Fredenberger (1974) and Friedman (2003) considers teacher burnout to be a result of an individual's low self-efficacy. Brown (2012) conducted a literature search on the relationship of self-efficacy and burnout and teachers. Brown researched articles that conducted statistical studies that resulted in a "negative correlation between self-efficacy and depersonalization in teachers." (Brown, 2012, p.60).

The foundation of moral development (Kohlberg,1958) and self-efficacy (Bandura, 1997) contributes to an individuals' ethical decision making based on their life experiences as children and their circumstances that contribute to their lack of self-efficacy as adults. The culmination of both factors contributes to burnout as an outcome of poor decision-making and catastrophic career choices. The factors which are the impetus to these lack of independent choices relate to Piaget (1952) and Kohlberg (1997) who examined how moral and ethical development originated in childhood. Children observe their parents who embraced certain values and beliefs. These values and beliefs were carry overs from observing their parents and embracing and accepting those values (Turiel, 2008). As a foundational part of their ethical belief system, adults who became teachers, embraced those fundamental values without consideration for their own opportunities to make decisions based on their current situation, self-efficacy, and career choice.

Friedman (2003) conducted a study of self-efficacy and burnout and teaching to investigate the importance of self-efficacy and its relationship to burnout. The study took place in Israel with 21 elementary schools. His sample consisted of 322 teachers from 21 elementary schools. Friedman's (2003) results included correlations between burnout and self-efficacy variables were statistically significant the lower self-efficacy belief the higher the burnout. Another result of his study identified influence and consideration which had relation efficacy as significantly predicting burnout. A strong link between self-efficacy was found through depersonalization.

Depersonalization from Maslach et al. (2001) was mainly affected by consideration which is a component of self-efficacy. Friedman refers to consideration as "attribution of responsibility" (Friedman 2003, p.207). Friedman noted that relationships with students was important to consider (classroom interpersonal relations) when establishing strong self-efficacy which is organizational interpersonal relations. The results of his data predicted unaccomplished exhaustion contributing to: teachers' difficulty creating the relationships with the students in their classes, perceiving them as individuals to teach and not accepting them as having their own knowledge. Aspects of these correlations contribute to teacher burnout (Friedman 2003).

Brown's conclusion originated from studying results in the literature of 11 articles that summarized the data and emphasizing the correlation between self-efficacy and burnout. Brown (2012) found that if the teachers have high levels of exhaustion the level of self-efficacy decreases. The lower the teacher self-efficacy the more detached the teacher can become to the children. The lower the self-efficacy the more the teacher becomes depersonalized. The more depersonalized a teacher becomes the more their plans and career choice goes awry.

As we began to look at the three cases studies we began to see a pattern of poor decision making that concludes with career expectations that don't line up with envisioned life choices and plans. The

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case studies presented in this chapter are examples of how teachers are conflicted with their decisions to leave their chosen profession. They reflect a disappointment in themselves, but find the circumstances are a mismatch of what they believed teaching would be and the reality of what they wanted their story or life choice to reflect. These case studies involve either self-efficacy decisions (Bandura, 1997) or moral development decisions (Kohlberg, 1958). The discussion of theories will be in the analysis of the case studies.

The First Case Study

The first case study by Schaefer, Downey and Clandinin (2014) presents a young lady who the authors call Natalie who describes her reluctance on leaving although she is aware that leaving teaching will be the right decision following a disastrous career choice. The first indication from Natalie's conflict was noted by her conversation on February 13, 2012 (Schaefer, Downey, & Clandinin, 2014). Part of her conversation was as follows:

…so one of the reasons I still kept going to work and was relative happy was because I loved being in the classroom. I loved the interactions there. Different things would happen every day …so different dynamic things happen and I like that. That's why I loved classrooms. (Natalie's personal communication, February 13, 2012.)

Schaefer et al (2014) also revealed that Natalie wanted to leave the teaching profession because she was not recognized and other people were given credit for what she had accomplished. She also had a frustration with contacting the administration to alert her of her decision to leave. Specifically, Natalie said," I tried to get in to see her and couldn't. I finally saw her in the hallway and I just said, "Oh by the way, I'm leaving next year". The principals' decision to share the reason for Natalie's choice to leave was to announce that she was leaving to attend graduate school which was fulfilling her dreams. The principal changed the reason for Natalie's departure in order to save face. Natalie's true reason to leave was based in reality of the disastrous career choice that she had made

Natalie's case study (Schaefer, Downey, & Clandinin, 2014) illustrated her inability to live out her imagined story of teaching. Natalie's case is only one example in a qualitative study. Since the study was looking at commonalities among her 4 teachers who left teaching in their first 5 years, researchers found all the participants were living out their imagined stories. Based on the study, although not necessarily generalizable, the concept imagined stories was created based on their in-depth description of their life experiences as beginning teachers who experienced burnout (Schaefer, Downey, & Clandinin, 2014). "We learned that individuals enter teaching embodying stories to live by and as a part of their stories to live by they also carry forward looking stories of their imagined lies as teachers which are part of their imagined lives as people" (p.14).

The Second Case Study

Brownell, Smith, McNellis and Miller (1997) conducted a mixed method study on why special education teachers leave the classroom. Authors are identifying this study as an individual case since the teachers were given the opportunity to not only answer survey questions but also share their individual reasons of why they decided to leave the profession. A portion of the study involved a survey that was given to 93 teachers who had left teaching special education. The results of the questionnaire reflected that 73.1% of the teachers changed to an education related career. The special education teachers who left

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the profession reflected 26.9% and choose a non-education related field. Brownell et al also interviewed seven teachers regarding their specific reason for leaving special education. These individuals were very direct about the specific reason they chose to leave. For example, Karen left after three years stated:

There were too many preps I had to do and too much paper- work. I had no aide. I was at school a lot of times until 10:00 at night doing paperwork. Also, when I accepted the position, I was told I would be co-teaching there after I had the job a week, they told me "you are teaching them all by yourself." I was lost and I felt like I was unprepared. I had a very big discipline problem. At one time I had up to15 kids in my class. The school sent me to some workshops but that was about it. The discipline in my class was very poor. (p.149)

Brownell et al., (1997) reflected on Karen's interview with the conclusion that she was disgruntled, felt non-supported and overwhelmed. They also said she did not realize she was unprepared. Another example from the study presented Jackie an emergency certified teacher who stated that she liked teaching the students but the amount of paper work that was expected was unrealistic. Jackie emphatically said she would become a special educator again because of the excruciating paperwork. The necessity of redoing the paperwork for small errors and the red tape contributed to her stress. The system is failing the kids and because of that I cannot support it. (p.149)

The Third Case Study

The third case study that addresses the issue of new teachers leaving the classroom was conducted by McCann and Johannessen (2004). Their qualitative study investigated teachers concerns and attitudes that create patterns underlying the reasons that they chose to leave the profession. McCann and Johannessen (2004) conducted 11 interviews of English teachers over a two year period of time. Their study generated five headings and eight categories. The headings were: relationships, workload/time management, knowledge of subject/ curriculum, evaluation/grading, and autonomy/control. Four subcategories included relationship with students, relationships with parents, relationships with colleagues, and relationships with supervisors. The interviews generated information from each of the 11 teachers that show how the teachers question their own abilities. One specific aspect is their admitted concern that "…a major difficulty that beginning teachers face is the challenge to define for themselves their teacher persona" (McCann & Johannessen, 2004, p. 2). They struggle with how they are supposed to know exactly how to act how to interact with children. Beginning teacher said, "what do I need to do to manage a class, am I overreacting and am I insisting on unrealistic standards" (McCann & Johannessen, 2004, p. 2).

An example of their self-reflection is demonstrated by Jonas, who was a very successful student, but he questioned himself to the extent that he became physically ill teaching in his class. Jonas also acknowledged that he was questioning his authenticity because he was not good at faking excitement about teaching material or sharing knowledge. Jonas also believed that other teachers were good a faking their emotions. Another example, Brendan, as a second year teacher, did not believe his student teaching experience presented a clear picture and understanding of being a teacher. He was assigned a partner for four of his five periods. The fifth period he taught by himself.

Brendan had the same confusion and apprehension as Jonas regarding his responsibility as a teacher, especially when he had to teach alone. Brendan compared his teaching with a partner when he was required to teach alone and questioned his capabilities. During an interview Brendan stated "I thought

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boy, I don't know if I can do this maybe I am doing this wrong. I don't know if this is going to work, I don't know if I can do this by myself." (n.d).

Another example is Clara who was considered very prepared because her mentors in the teacher education program informed her how to manage the classroom and gave her specific strategies that support the management. When faced with the real life situation as a beginning teacher she tried all of the strategies to manage her class but the strategies failed. "Clara expected reasonable interventions to solve the intolerable situation" (McCann & Johannessen, 2004, p. 3). Because of her failure, Clara was confused and frustrated. She feared entering her classroom every day to be faced with children who were unmanageable. What Clara faced was a lack of decision making when the decision she made failed. Therefore, when things don't go as one plans the resulting effect is a mindset that creates the conditions where one believes she or he has made a catastrophic career expectations that continue to contribute to a lack of self-concept, not trusting one's self, questioning ones authenticity which results in a continuous circle of bad decision making which could lead to poor career choices. How do we break that cycle?

Analysis of the Case Studies

This chapter presented three case studies that examined teachers' poor decision making to enter the teaching profession based on their perception of what they believed teaching would be and the reality of what teaching encompasses. The authors presented these studies to acknowledge the fact that some people are not meant to teach. The ethical implications of these case studies included the teachers understanding of the reasons they entered the teaching profession, the belief system they embraced as to their own reality of their expectations, which was their imagined stories that Shaefer, et al., (2014) described in their research study. The participants told themselves stories of what teaching was and wanted to live up to those stories even if they were not true. The untrue stories imply that ethically the teachers did not want to face the reality of the teaching environment. The ethical implication of the case studies applies to Kohlberg's moral development theory.

There are separate ethical implications for the acceptance of the teachers' self-efficacy as explained in Bandura's theory of self-efficacy. The research on the theory understanding why people are not making the correct career choice is based on Kohlberg's (1957) work with moral development and Bandura's (1997) work with self-efficacy. Each case discussed was taken at the face value of the researchers study data. Therefore, in the first case study, Natalie's decisions were based on both the self-efficacy theory and moral development theory. Natalie created a situation for herself that involved her morality of standards in which she accepted lies about what teaching was to her. This was a decision she chose to make in order to believe her imagined stories instead of what the true reality represented. Her decisions were based on the lack of self-efficacy since she resented people who were given credit for her work. She did not take the initiative to come forward, but rather felt cheated because she wasn't recognized or acknowledged for her work. Therefore, her self-efficacy was not a strength in her decision making process and she chose to leave the profession. Natalie's morality lead her to create her imagined stories.

The second case stud, a mixed method study, included both quantitative and qualitative data. The study involved seven teachers who left the profession primarily because their workload and lack of administrative support were a hindrance to their perception of what they expected from their teaching career. However, this chapter addresses the results of three of the teachers. The categories created from the study data are relationships, workload/time management, knowledge of subject/ curriculum, evaluation/grading, and autonomy/control.

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The theory that applies to the second case study is Kohlberg's (1958) moral development. They had certain moral standards of how teachers were expected to be treated and what they believed the responsibilities entailed. When they carried out their responsibilities they did not receive the support, recognition or consideration of administration or colleagues. Therefore, they chose to embrace the moral values of their personal beliefs being they were not going to receive what they deemed was morally right for supporting beginning teachers. Their choice was to be forthright of the situation and leave the profession.

The third case presented implications for both Bandura's (1997) self-efficacy and Kohlberg's (1958) moral development theories. Three individuals were interviewed to understand why they left the profession. Jonas was a very good student as he completed his education. However, he questioned himself on a regular basis because he felt unsure of how to teach. His self-efficacy was poor since he really didn't feel comfortable having to carry out some of his responsibilities. In addition, he also was questioning why other teachers could fake their emotions every day as they interacted with students. Jonas felt very uncomfortable and dishonest because he was unable to fake his emotions as he interacted with his students. The self-reflection he practiced on a regular basis was related to Kohlberg's (1958) moral development theory. Jonas had strong moral development because he was unable to follow through with behaviors that compromised his values. His decisions were also related to his strong self-efficacy explained by Bandura (1997) when he chose to leave the profession.

Brendan, another teacher in the third case study was frustrated with his teaching career because he felt unprepared. When he was hired he was told he would collaborate with another teacher. However, he taught by himself and felt isolated and unsupported. He then began to question himself and his abilities. His behavior was a result of the lack of self-efficacy (Bandura, 1997) whereby Brendan felt completely alone, something he did not anticipate. He chose to leave the profession based on his lack of feeling strong in his abilities related to his self-efficacy.

Clara was also part of the third case study and believed she was very prepared for her teaching career since she had strong experiences in her college preparation. However, when she began to teach the strategies she was provided, did not work. Her students became disruptive and she could not control them. She was very frustrated because she counted on the use of what she had learned. She also believed that she was not prepared when nothing worked and did not know how to solve the problems she encountered. Clara did not have the self -confidence to create new strategies or address the problems encountered. The lack of self-confidence was the impetus for lack of her self-efficacy (Bandura, 1997) whereby Clara felt betrayed by her mentors and did not believe she had the skills to develop her how strategies. Instead, she chose to leave the profession than rather pursue creating new approaches to solve her problems in the classroom.

All three cases demonstrate the practical application of both Kohlberg's (1958) and Bandura's (1997) theories. Since there was a relationship between the concepts of moral development and self-efficacy related to teacher burnout the application of the theories presents a picture of the practical decisions that were made by the individuals in each case. On the basis of all three cases and the decisions that the teachers made from a global perspective, they had difficulty with reflecting on their moral fiber of why they wanted to teach.

They may have not researched the teaching profession as a viable means for a career. When they became teachers, they were faced with not realizing that the moral decision that they made was not beneficial to them. This decision of becoming a teacher also influenced their self-efficacy of who they are as individuals and what they truly wanted for their life's work. When they entered the profession, they entered with expectations and their expectations were not grounded in strong self-efficacy. Therefore,

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the psychology of their decision making was not of prime importance resulting in a poor career choice based on incongruous perceptions about the reality of classroom teaching.

SOLUTIONS AND RECOMMENDATIONS

Suggestions for Better Decision Making

The three case studies that have been presented in this chapter have shown how the theories of moral development (Kohlberg, 1958) and self-efficacy (Bandura, 1997) can be practically applied and have implications for new practices which help beginning teachers make better decisions for their career so that they are not faced with burnout. This section will include several suggestions based on the poor decisions that teachers made within each case study.

One suggestion is to write down a couple of bad decisions. Dissect the decisions to choose something in that decision that can be salvaged. Think about recreating another decision which can be tried under the same circumstances. For example, in the third case study, Clara had strategies that did not work in her classroom. If she wrote down the exact details of the strategy, and choose one or two details to address, Clara could use those details to create her own new strategy and experiment with the new strategy looking forward to the new outcome. This example serves to help Clara with increasing her self-efficacy because she is creating something new. It also related to the theory of self-efficacy increasing her self -confidence to fulfill her goal of being successful in the classroom. Both of these positive outcomes may prevent burnout and give her a renewed sense of self.

Another suggestion is the use of a self-reflective journal. Using a spiral notebook or any book that has blank pages for writing will serve as a journal. The advantage of a journal is the individual's practice in noting what was frustrating that day and thinking of how to change that frustration. Many people have several journals for different purposes. In this example, the teacher or individual writes about circumstances that are frustrating to them on one side of the book and what they believe they could do to make a better decision on the other side of the book. Hopefully, the next day they won't face the same frustration. The most important outcome of the journal suggestion is personal honesty. If individuals are not honest with themselves they will face what one case presented as creating imagined stories.

An additional suggestion is to choose another teacher with whom the individual can feel safe and confide to help him or her role play a problem which they confront in their classroom. Role playing can also be used across disciplines. Role playing is beneficial because it gives individuals an opportunity to look at a problem from multiple viewpoints. An example of an effective role playing situation is from the case study of Brendan who was fearful of teaching alone after he was told he would be collaborating with another teacher. Brendan could have chosen a teacher friend who he felt comfortable sharing his frustration of teaching alone. Within this context, Brendan could have explored different alternatives and suggestions for reaching his students as a solo teacher. His role play would offer practical opportunities to reach his students without having to count on another teacher in the room to assist him. Role playing is also a great opportunity to use video so Brendan could watch the exchange more than once and continue to learn and review the experience.

A final suggestion is to hire a life coach or a teacher mentor. Having regular session with a mentor/ coach can assist the teacher to be self-reflective and problem - solve using their own ideas. The mentor/ coach is a person who asks questions and provides feedback that opens the teacher to his or her own ideas.

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The mentor/coach is not meant to substitute for a person that provides all the answers. The answers come from the teacher in the form of feedback which becomes self-reflective for the teacher. An example of the mentor/coach relationship is from the case study of Natalie. If Natalie had hired a mentor/coach she would get the chance to role play a conversation with the administration. She would make the administration aware of her accomplishments and inform them so that others would not get credit for her work.

CONCLUSION

The objective of this chapter was to explore the effects of defective decision making that contributes to the phenomenon of beginning teacher burnout. The authors have presented three case studies that address the problem of beginning teacher burnout as a result of poor decisions. This chapter also addressed the psychological effects of burnout. The theories of moral development from Kohlberg's (1958) study and Bandura's (1997) self-efficacy were the impetus of how the examples of situations that impact an individuals' decision making result in burnout. Bardo,1979) noted,

This does not mean we shall ever to be able to erase all the stressors. Most of them are direct reflection of ourselves. We must teach ourselves new coping mechanisms for what will not go away. We have to work around our weaknesses and find our strengths.(p.253)

The authors offered practical suggestions that are solutions helping individuals be better decision makers. The goal of being a better decision maker is to decrease teacher frustration and circumvent factors that lead to burnout. The stronger teachers decision making skills, the less likely that they will experience burnout. The objective of the suggestions to help others use ideas that promote better decision making.

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Chapter 46
Association of Occupational Burnout and Nursing Errors With Patient Safety: A Systemic Review

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ABSTRACT

During the daily nursing practice, dangerous situations might appear that, if not recognized and treated early, can lead to fatigue and professional burnout, causing detrimental consequences for the patient's safety and the adequacy of the healthcare quality of the provider. This article aims to synthesize existing research investigating the association between burnout in healthcare professionals with the safety of patient care in the last decade. The authors herein examined specific nurse surveys that involve burnout assessment and association with clinical errors throughout nurse provided care. Results from this search indicate that patient safety culture must be cultivated towards nursing errors and burnout reduction. The prompt recognition of burnout signs is the critical parameter for nursing errors prevention and patient safety, in the long term. Nursing error management is oriented towards investigation of the burnout symptoms and exists as an integral and essential issue for nursing administration to ensure excellent and qualitative patient care.

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INTRODUCTION

The mental health statue of healthcare professionals is an important issue (Mark & Smith, 2012) and must be of great concern to health care organizations and researchers (Kirwan, Matthews & Scott, 2013). Nurses are called upon to deal with situations of severe psychological stress that could lead to occupational distress syndrome over an extended period (Baier, 2018). Such situations are the lack of human resources in hospitals, the quality of interpersonal relationships among team members (Aiken et al., 2002), the attitude of administration to the healthcare centers (Sims, 1997; Robinson et al., 1991). Occupational stress and burnout can have adverse effects on both professional behavior (Bakker et al., 2000) and patient health and safety (Dewa et al., 2017).

When providing nursing care, errors or adverse events are likely to occur. The Institute of Medicine defines error as the failure to complete a planned task or use of a wrong method to accomplish the goal. The World Health Organization (WHO) reports that one out of ten patients has been affected by a human error. Also, the Institute of Medicine adds that between 44,000 and 98,000 deaths are recorded each year due to medical errors (Mohammadfam & Saeidi, 2014; Kopec et al., 2003). Professional qualifications, nursing workload, the patient severe situation can turn into risk factors for patient missed care. Nurses coordinate and accomplish interventions to be directly near the patient (Garcia & Fugulin, 2012) and, thus, health organizations reorient their interest to patient safety culture, something that ''must'' be apparent during health care and not ''nice to have'' (Koppenberg J., 2012).

Burnout Syndrome

Bradley (1969) first mentioned the term ''staff burnout'' and Freudenberger (1974) is stated to be the founded father of occupational burnout. Furthermore, Maslach et al. (1981) gave the frequently cited definition describing it as a syndrome of emotional exhaustion, depersonalization, and personal accomplishment among individuals who do ''people work''. The updated 11th International Classification of Diseases (ICD-11) listed burnout among ''Factors influencing health status or contact with health services'' describing it as the workplace stress that has not been effectively managed including it at the Section "Problems associated with employment or unemployment'' not forming a medical disease, though (WHO, 2019).

Burnout in The Nursing Profession

Burnout syndrome affects the general behavior, the productivity level and the professional turnover of nurses. Work-related stress results from the lack of human resources, high workloads, interprofessional conflicts leading to mental fatigue, anxiety, lack of motivation, work absence and job dissatisfaction (Kacmar et al., 2009; Laschinger et al., 2007). In a few studies, sociodemographic factors have been assessed (Gómez-Urquiza et al., 2017; Ayala & Carnero, 2016) while others studied psychological factors such as the five personality traits (Hudek-Knezevic et al., 2011) or occupational factors (Vargas et al., 2014). Nurses at specific departments are more likely to experience higher prevalence rates of burnout. Emergency department nursing personnel seems to face high levels of burnout due to overtime workday (Albendín et al., 2016). Remarkably increased level of burnout is stated by Gómez-Urquiza et al. (2016) for oncology nurses.

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Nurses often witness scenes of death and bereavement. So, this exposure, may lead to the appearance of this phenomenon (Ferreira & Lucca, 2015). Nurses in oncology departments face severe levels of burnout (Russell, 2016). Vimantaite & Seskevicius (2006) revealed a huge percentage of 84,4% of nurses that mention emotional stress, unevaluated work and low salaries. ICU nurses were evaluated according to burnout appearance, and revealed a percentage of 14,3% of 91 nurses who suffered from burnout (Vasconcelos & Martino, 2018). Pediatric nurses appeared to have moderate to high levels of emotional exhaustion and depersonalization demonstrating that those nurses may have already burnout syndrome or are at possible risk of experiencing it (Pradas-Hernandez, 2018). A different term of exhaustion is called fatigue and can be of sudden appearance with more effortless ability to be recovered of. A prolonged stay in fatigue can lead to burnout syndrome. It may be derived from a post-traumatic situation (Schwam, 1998) and it can alter the job performance, nurse's personality (Vahey et al., 2004) and result to an increase of adverse events.

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Burnout and Nursing Errors

Every year, healthcare systems face a serious problem and that is the preventable deaths that happen by medical errors (WHO 2004). The World Alliance for Patient Safety estimates that 10% of hospitalized patients come up with an adverse event every year (WHO 2004). Needleman et al. (2001, 2002), defined fourteen variables as clinical Outcomes Potentially Sensitive to Nursing (OPSN) such as length of stay, infections, hospital-acquired pneumonia, sepsis, thrombosis e.t.c. Distractions during work tasks, heavy workload, the inadequacy of supervision, inexperience are found to contribute to errors, as Karga et al. (2011) studied. Interruptions to nurses during the preparation of medicine and administration are quite often leading to undesirable events (Karga et al., 2011). Effective nursing leadership, organizational issues, adequate staffing and effective nurse/physician communication can affect nursing practice (Aiken et al., 1994). The most frequent adverse event reported was patient complaints (Leiter & Laschinger, 2006). Quality of care is disturbed when the number of tasks and patient turnover are increased (Duffield et al., 2011). High levels of burnout were associated with lower patient safety scale (Halbensleben et al., 2008). Nurses that suffer from burnout are more likely to make errors and those experiencing burnout do not report near misses too, which is very important if a healthcare system wants to create a complete database of incidents and apply preventable measures (Hoskins, 2013).

Patient Safety

Health institutions try to promote unusual behaviors and attitudes to shape the culture of their mission (Kaufman & McCaughan, 2013). According to the Institute of Medicine, it is very essential for every healthcare institution to synthesize a specific safety culture, which includes beliefs, values and guidelines to safe clinical health practice and promote its members to follow the principles. These organizations were developed to help and heal patients and not harm them (Stefl, 2001). Mortality and morbidity are increased when medical errors are occurred (Zencirci, 2010). British health services support the promotion of reporting and analyzing errors to develop an active safety culture and apply safe nursing prac-

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tices (National Health Service, 2004). In the USA, the Department of Health acknowledges the 'blame safety culture' remains dominant in healthcare (Agency for Health, 2012). Some countries use specific measures to reduce medication errors and improve patient safety. Computerized and digital programs (Watts & Parsons, 2013) are practices that if remain updated and being followed by all staff members, they could promote healthcare services efficacy. The American Society of Clinical Oncology and the Oncology Nursing Society created safety standards for the administration of chemotherapy (Jacobson, 2012). The reporting system is a useful method to gather information about errors, but the frequency of non-reporting is quite high (Grenier-Sennelier et al., 2002). Nurses have a short amount of time facing understaffing issues at the same time, so they do not have the essentials to record such events along with the fear of punishment (Stratton et al., 2004).

AIM

This systematic review aimed to explore the impact of nurses' burnout on patient's safety, and precisely, on adverse events occurring in the last ten years (from 2010 to 2019). The review had two specific aims:

1. To collect and synthesize the existing research data on this topic.
2. To present the search results in a way that could raise awareness of nursing administrations to develop strategies targeting to nurses' and patients' well-being.

METHOD

This systematic review was completed following the guidance of Kitchenham and Bacca (2004) methodology, which divides the process into three parts: planning, conducting and reporting results. Firstly, we came up with a search plan related to nurses' burnout and how this affects the possibility of personnel to make errors threatening patient safety. The following step was to conduct the research process and after careful examination of the results, we had to report the appropriate and most relevant items. The precise research question was how the burnout syndrome of nurses affects the patient safety by making errors in clinical practice. The search strategy is described below.

Search Strategy

In this research procedure, we used two academic databases (PubMed, Medline) and one academic search engine (Google Scholar) along with reference searching of all related articles. Keywords were used in an advanced search for descriptive, prospective and cross-sectional studies based on common terms in the field of Nursing. Reports were searched containing both in title and abstract at least three of the following blocks: (burnout) AND (nurses) AND (errors OR nursing errors) AND (patient safety). Nursing errors was the most essential term in our research. The years to be examined included the last decade and that is from 2010 to 2019. Only papers in English language were investigated, despite the initial origin. For example, if a Spanish article was found, it could be encountered in this review, provided that it is published in English language too.

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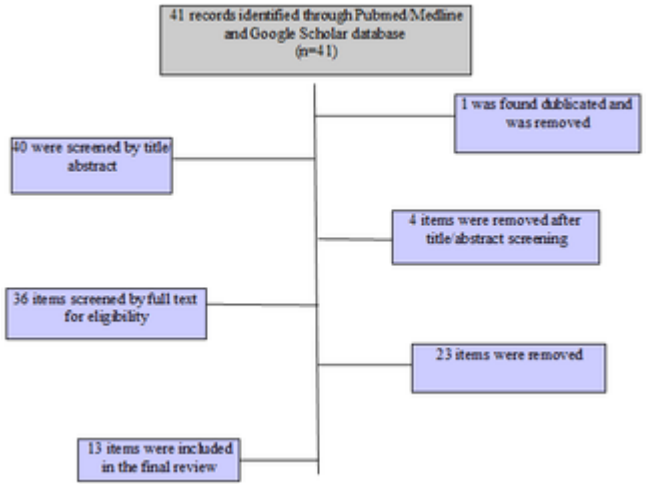
Table 1. Electronic databases searched and number of results

Database	Papers Identified
Medline (through PubMed)	38
Google Scholar (Academic Research)	3
Total	41

Search Outcome

Throughout the literature search process we came across with a total of 41 items (*Table 1*). A flow chart documenting the selection process can be viewed in *Fig.1*. One item was found twice and has been excluded from the search. Then we examined the titles and abstracts due to similar topics combination. Four reports were excluded at this phase, continuing with the assessment of the full texts of the remaining items. So, according to the eligibility of the review topic, we examined carefully the subjects of the other items and a total of 13 papers were concluded in this review.

Figure 1. Flow diagram illustrating the search and screening process



RESULTS

The main findings are oriented towards the relationship between nurses' burnout and errors occurrence. Studies with nurses population are presented (*Table 2*). According to Bao et al. (2014), nurses who presented high levels of emotional exhaustion and depersonalization, revealed their involvement in an adverse event (p=.009 and p=.030 for each dimension). Analyzing each dimension univariately, worsening scores for errors appeared. Regarding emergency units, with the participation of 284 nurses, 75,4% of them were found to suffer from exhaustion, fatigue and burnout leading to medical errors (Kiymaz & Koç, 2018). On the other hand, a report of the nursing workload and how it affects nurse and patient outcome, found out that burnout and job dissatisfaction are correlated in a significant degree. However,

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these factors did not seem to have an impact on the occurrence of the medical error (p=1.10)(Holden et al., 2011). Burnout symptoms are non-significant independent risk factors for such errors, as depression's were and was not associated with medical errors (percentage of staff with burnout >2,6% with 0.41)(Garrouste-Orgeas et al., 2015). German nurses doubled their emotional exhaustion levels within a decade concerning more about the quality level of care given (Zander et al., 2013). The frequency of infections is an essential indicator of a safe healthcare system. Cimioti et al. (2012) stated that nurses with burnout were found to come up with quite frequent urinary tract and surgical sites infections (p<0.1). For 1 out of 1,000 patients, one urinary tract infection and two surgical site infections can occur, if there is a 10% increase in nurses with high levels of burnout. By lowering burnout levels, infections and additional health costs were decreased too. Using just numbers, a health institution can save about 69$ million from this kind of infections, if prevented (Cimioti et al., 2012). Medical errors and patient falls are found to be more favorable than infections. Researchers analyzed results from 96 units revealing that one out of eight units appears to have high or very high percentages of personal accomplishment. Interclass correlations show ranges of .26, .13, .09 for the three dimensions of burnout and .10 for medical errors (Van Bogaert et al., 2014). Kirwan, in 2013, published a study by using a multilevel approach to investigate the impact of the nurses' work environment on patient safety. During ward level variables apposition, emotional exhaustion was added as for nurse characteristics linked to patient safety outcomes with .120 significance range (Kirwan, 2013). Nurses approximately mentioned three pressure ulcers and three medication errors within the last four months. The same population reported moderate levels of emotional exhaustion (Squires et al., 2010). Extended working hours contribute to the staff's exhaustion. Positive correlation among working hours, emotional exhaustion and depersonalization were found in a recent study (Kunaviktikul et al., 2015). Also, four specific outcomes were related to extended work hours: communication errors, patient identification errors, pressure ulcer and patient complaints. Emotional exhaustion and depersonalization appear with .001 and .002 P values respectively. Bao (2012) had a research concern on economical and ethical value incongruence, which were correlated to burnout and accident propensity, consequently, using a population of 234 nurses. The negative correlation between patient safety attitude and emotional exhaustion was found adding the fact that when there was a patient safety decrease, emotional exhaustion of nurses was increased (Bilal & Yildirim, 2019). Finally, 33,1% of a studied nurse population, nurses who involved in a patient safety incident, suffered a risk of burnout. The extend of patient harm was a significant factor for nurses to develop negative daily habits, such as alcohol and medication use (Van Gerven et al., 2016).

DISCUSSION

Burnout has been associated with quality of care affecting the whole interdisciplinary team. Interruptions during work performing, interpersonal relationships, psychosocial individual's reasons may affect one's attitude towards risk of burnout (Holden et al., 2010). A multifactoral situation can lead health professionals to errors. Healthcare settings, through managerial perspective, should realize this phenomenon and develop a patient safety culture which can contribute to a positive correlation between the balanced mental statue of nurse and quality of care given (Laschinger & Leiter, 2006). The three dimensions of burnout (emotional exhaustion, depersonalization, and personal accomplishment) began to be investigated separately in order to make correlations with many variables. Nurses that experience higher emotional exhaustion and depersonalization are more vulnerable in involving in patient errors (Schelbred et al.,

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2007). Researchers include patient falls, ulcers, complaints, infections and medication errors at preventable adverse events list (Kunaviktikul et al., 2015) while others found no association of burnout with medical errors (Garrouste-Orgeas, 2015). Working environment, heavy workload, conflicts among staff, individual units (Garrouste-Orgeas, 2015) contribute to the burnout appearance and likelihood of medical errors making. Patient harm has reversal effects on nurses burnout so nurses experiencing burnout can make an error during job performance and adversely, when an error occurs, depending on the extent of patient's harm, can have an impact on burnout's appearance to the nurse. Researchers who study nurse's fatigue, mention that tired nurses were one of the three factors of error causes (Mayo & Duncan, 2004). The appearance of occupational exhaustion and subsequent error, through an organizational view, can provoke costs imbalance to an institution, not only from the patient incidents but also from nurses absenteeism, negative mental status, physical problems with further treatment (Health Do, 2000). Errors reporting system ought to be applied within healthcare providing settings, and health professionals must be trained and encouraged to document errors and near misses not to be blamed and ashamed for, but for cultivating a patient safety culture.

Table 2. Summary table of included papers

Author, Year & Country	Design	Aim of the Study	Sample	Findings
Bilal & Yildirim (2019) Turkey	Observational, descriptive and cross-sectional study	Determine the relationship between patient safety attitudes and pediatric nurses' burnout	104 nurses	Emotional exhaustion was identified in more than half of the participating nurses, with a negative correlation between the attitude towards patient safety
Kiymaz et al. (2018) Turkey	Descriptive cross-sectional study.	Determine individual and professional factors affecting the tendency of emergency unit nurses to make medical errors and their attitudes towards these errors	284 nurses	Factors that caused medical errors in the emergency unit: 91.2% of the nurses stated excessive workload as a cause; 85.1% stated an insufficient number of nurses; and 75.4% stated fatigue, exhaustion and burnout.
Van Gerven et al. (2016) Belgium	Cross-sectional survey	Investigate the prevalence of health care professionals being personally involved in a patient safety incident (PSI)	5788 nurses (79.4%) and physicians (20.6%)	Nine percent of the sample in this study was involved in a patient safety incident (PSI) during the past six months. PSI involvement was related to a higher chance of problematic medication use, excessive alcohol consumption (among nurses) and risk of burnout

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Table 2. Continued

Garrouste-Orgeas et al. (2015) France	Prospective, observational, multicentre study	Staff behaviours to optimise patient safety may be influenced by burnout	779 ICU nurses	Burnout was not associated with medical errors but other independent risk factors were related to it..
Kunaviktikul et al. (2015) Thailand	Descriptive predictive study	Examine nurses' extended work hours and its relationship to the patient, nurse and organizational outcomes.	1524 registered nurses	Fatigue could be a likely explanation for extended working hours and patient outcomes
Lewis et al. (2014) USA	Cross-sectional study	Examine RN involvement in preventable adverse events and how burnout is associated with RN and system characteristics	218 nurses	High levels of emotional exhaustion and depersonalization were associated with involvement in a preventable adverse event (p=.009 and p=.030)
Bogaert et al. (2014) Belgium	Cross-sectional study	Investigate the impact of nurse practice environment factors and burnout on nurse reported job outcomes and patient adverse events.	1108 nurses	Frequency of adverse events such as falls and medical errors were rated favorably than hospital infections associating with High mean values for three burnout dimensions.
Bao et al. (2013) Spain	Cross-sectional study	Report the relations of value incongruence to the individual and organizational well-being variables of self-rated health, turnover intention, and accident propensity, as mediated by burnout	234 nurses	Burnout was significantly correlated with accident propensity.
Kirwan et al. (2013) Ireland	Cross-sectional study	Explore the relationship between the ward environment and specific patient safety outcomes	1397 nurses	Emotional exhaustion did not significantly contribute to the number of adverse events reports.
Zander et al. (2013) Germany	Longitudinal, cross-sectional survey	Analyze whether the diagnosis- related groups implementation had measurable effects on the quality of patient care and safety	4192 nurses	High patient safety is asscosiated with emotional exhaustion
Cimiotti et al. (2012) USA	Cross-sectional study	Linear regression was used to estimate the effect of nurse and hospital characteristics on health care–associated infections.	7728 nurses	Staffing-infection relationship was mediated by burnout and burnout was associated with UTIs and SSIs

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Table 2. Continued

Holden RJ., et al. (2011), USA	Cross-sectional study	Conceptualized a human factors model for the workload at three distinct levels of analysis	199 nurses	There was not a significant association with the possibility of medication error occurrence.
Squires et al. (2010) Canada	Cross-sectional study	Test and refine a model examining relationships among leadership, quality of the nursing work environment, safety climate and patient and nurse safety outcomes.	267 RN in acute care	Emotional exhaustion significantly correlates with medication errors.

CONCLUSION

Nurses' burnout and errors during practice are two terms interconnected. More studies should turn their interest to them regarding patient safety. Nurses face emotional exhaustion, depersonalization and personal accomplishment because of work factors. The individual can manage difficult or stressful situations that could lead to a patient's adverse event. However, administrators must apply measures and educational programs to maintain professionals' physical and mental wellbeing and patient safety. Error and near misses reporting could help in understanding the reasons and the circumstances under which the error occurred. Interviews with nurses to promote a safe and friendly communication would be a valuable measure for individuals to accept the fact and be more conscious and aware of the dangers. Managers, though, must develop the attitude of ''not to blame, just to share'' in order to realize all the risk factors in an institution that could put in danger the attendees. Burnout levels should be measured quite often to all staff members due to correlations with negative or positive results, accordingly. Nurses are the members-key towards proper and effective health care providing. Attention must be given to this population and its general wellbeing and motivation to be more productive enhancing patient safety and total benefit for the healthcare organization.

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Chapter 47
Burnout and Stressors as Influencers on Work Engagement Among Law Enforcement Agents in Selected Cities

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ABSTRACT

Burnout is an underlying issue that has an adverse effect on the working enthusiasm of the employees. In this chapter, the researcher has attempted to assess the influence of stressors on burnout and work engagement in the context of the Indian law enforcement agents. The study evaluates the correlations between burnout factors—emotional exhaustion, cynicism, low professional efficacy—with vigor, dedication, and absorption. For the purpose of this study, items from MBI-GS for assessing burnout, scale for stressors, and employee engagement are adapted. The construct of the scale developed was established using confirmatory factor analysis. The study was carried out for 145 law enforcement agents in the selected cities of a North Indian state. T-test results applied on stressors between male and female groups show varying results. A significant negative effect of burnout factors on work engagement factors is observed through the empirical examination using SEM AMOS.

INTRODUCTION

Every law enforcement agent has to deal with stress related elements that could be interpersonal (family matters), workplace (organizational levels) and those related to tasks (job demand) such as issues related to encounters, investigative search and fear of injury (Toch, 2002; Carson, 1987; Violanti&Aron, 1994; Malach-Pines &Keinan, 2006). The Burn out issue has been a center point of the study for researchers

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in varying fields Nursing (Havens, Gittel, &Vassey, 2018), police officers (Dick, 2000;Malach-Pines &Keinan, 2006; Kwak, McNeeley, & Kim, 2018), neurologists(Miyasaki et al., 2017), firefighters (Lee etal.,2018; Smith et al.,2018) and teaching(Hakanen, Bakker, &Schauefeli, 2006). Burnout is an aftermath of stress and related factors that diverges an individual's interest towards work (Hakanen, Bakker, &Schauefeli, 2006). It is considered to induce a feeling of extrication from work and creates exhaustion and skepticism towards work (Maslach et al., 1996). Burnout disengages people from all those roles at work which are considered as effective, involving and energetic (Maslach&Leiter, 1997;Maslach, 2001; Cole et al.,2012). However, researchers have considered Burnout as an independent activity(Schaufeli& Bakker, 2001, 2004; Bakker, Demerouti, &Schaufeli, 2005). It is a concept which can only be explained by having a separate set of measures. According to Schaufeli& Bakker, (2003, 2004) Maslach's Burnout Inventory (MBI) does not clearly assess Burnout empirically as well as conceptually.

Work engagement is a positive expression of feelings towards work and aspects related to work. The expression constitutes of vigor, dedication and absorption. "Vigor is characterized by high levels of energy and mental resilience while working, the willingness to invest effort in one's work, and persistence also in the face of difficulties." "Dedication means a sense of significance, enthusiasm, inspiration, pride, and challenge." The third factor of work engagement is absorption, "which is characterized by being fully concentrated and happily engrossed in one's work, whereby time passes quickly and one has difficulties with detaching oneself from work."(Schaufeli, Salanova, Gonzalez-Romá, & Bakker, 2002). It is also considered as a feeling that generates commitment towards job and a sense of responsibility. Further researchers posit engagement to be behavioural aspect inclusive of trait features reflecting to an individual's efforts towards work(Crawford, Le-Pine, & Rich, 2010). Thus, work engagement is a constituent to the contributions made to organization through an individual's gusto withstanding the hurdles in achieving targets. Additionally, researchers have different explanations to engagement, which is a physical, cognitive and emotional expression to the roles in organization.

In this study however, the researcher utilizes the MBI as a measure of Burnout to understand the intricacies involved in work engagement of law enforcement agents. Moreover, a number of stressors are also associated with the law enforcement job holders (Malach-Pines &Keinan, 2006). The stressors cause an imbalance to the empathetic and authoritative combination of the agents. Organizational Stressors involve the challenges faced at the administrative, organizational structure and daily task related. The command chain followed in law enforcement departments sometimes impair decision making. Lingering stressors are related to the timely execution of goals and meeting the deadlines. Shifts are usually oddly placed owing to the nature of job and overload is common. External stressors are the most accrued for law enforcers. The cooperation with other departments is minimal and police officers have to invest additional time to meet the necessity of job like accompanying a high profile criminal for hearing to court and handling press. Further the researchers have designated the burnout symptoms like alcohol abuse, personal unresolved matters, job dissatisfaction, social disconnection, extreme public exposure, aggressive attitude (Kwak, Neely, & Kim, 2018).

Past researchers have considered Burnout to be different in case of law enforcement agents as it involves not just the stress conditions but display of multiple emotions that should not be expressed socially. The stressors aggravate such emotional display which consequently effects the work engagement. Some police officers happen to shift to different departments as a result of dissatisfaction or dissonance with work. Studies have revealed that cynicism increases with extreme public exposure. This increase in cynicism creates work disengagement and also limits the social interaction of law enforcement agents (Kwak,

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Neely, & Kim, 2018). The stressors create emotional outbursts among police officers besides nervousness (Malach-Pines &Keinan, 2006). The purpose of this study is to understand the role of stressors that aggravate burnout. Furthermore, the study explores the burnout and stressor effect on work engagement. It is necessary to understand the relationship of stressors with burnout factors of MBI in Indian context.

LITERATURE REVIEW

Burnout

Law enforcement officers have to face several stress situations every day that mulls out energy, patience and make them repress emotions (Hillgren& Bond, 1975; Jovanovic, Krajnovic & Marinkovic, 2018). Past literature has defined Burnout in both fictional and non-fictional terms that shows loss of desire, a work generated craving and optimism associated with job (Maslach, Schaufeli, &Leiter, 2001;Atouba & Lammers, 2018). It is the day to day challenges that are faced by individuals at work particularly police officers who have to remain both agile and more fixated to solve civil issues (Maslach & Schaufeli, 1982). Burnout is an after effect of the stress that has been persistent in professional arena to an individual and is unavoidable (Maslach, 1982). It is therefore, considered as a negative outcome of the stress that has accumulated in the attitude of the individuals. The corpus of time spent on work along with stress left untreatable creates assumptions related to job that subsequently confounds confidence and questions objective doing what the person is intended to do (Maslach & Schaufeli, 1982). This creates a pattern in the consciousness of the individual which is fabricated into several negative thoughts and breakdowns. Further, it propagates negative thoughts and later individual starts dejection of self -accomplishments and job(Maslach, Schaufeli, &Leiter, 2001). The origin of the term burnout is credited to the work of fiction in a novel "A Burn-out Case" (Greene,1961;Maslach, Schaufeli, &Leiter, 2001) and the research conducted on human amenity workers in whom the forfeiture of drive and obligation was studied(Maslach, Jackson, &Leiter, 1996). Past studies display that Burnout has its fundamental beginning from the services based jobs that have high performance expectations and require perfect time execution (Maslach& Jackson, 1984).

Police force job is civil service that requires persistent nimbleness and effective response to the incidents in surroundings. Effective response designates to the ideal use of emotional and cognitive reflexes. Burnout leads to negative and abating service from an individual leading to depression, absenteeism and meager productivity(Kop, Euwema&Schaufeli, 1999). Additionally, Burnout may lead to increased use of alcohol, abusive rambling, insomnia, creating personal and professional distance from colleagues and even family members (Maslach& Pines, 1977; Maslach& Jackson, 1985).Gender differentiable study has also been conducted in relation to Burnout that (Purvanova&Muros, 2010). Studies concerning Job Burnout among law enforcement agents in India are very scarce (Ranta&Sud, 2008;Bawa &Kaur, 2010; Suresh et al., 2014) but have been widely studied in other countries around the globe (Carlson, Anson & Thomas, 2003; Moustert&Joubert, 2005; Storm &Rothmann, 2003;Queirós, Pereira, & Martins, 2012;Odedokun, 2015;Chappelle et al.,2014). Past explorations based on Burnout in Indian context have been carried out on software developers (Advani et al., 2005; Singh, Suar, &Leiter, 2012), call center associates (Surana, Singh &Saxena, 2011; Surana& Singh, 2012), manufacturing and other sectors (Sharma, 2002; Anand&Arora, 2009; Mehta, 2012).

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Past studies have promulgated the constituents of Burnout as emotional exhaustion, cynicism and low personal worth (Maslach, 1982;Maslach, Jackson &Leiter, 1997). Emotional exhaustion is considered as a prolonged situation where an individual gets worn-out of emotions and physical aspects such as interaction with public, criminals, performing day to day roles as per expectations of the higher authorities and duties of the crime scene and point of impact(Maslach& Jackson, 1985). These result in psychological grumbling situations, early fatigues at work, depression and anxiety(Bakker, Nachreiner, &Schaufeli, 2001). An interpersonal interaction to meet ever increasing emotional demands results in enervation of resources for further communication. In cynical state an individual feels the need to distant self from the source of demotivation. This distance is so created to make self-aware of the causes of emotional depletion(Maslach& Pines, 1977; Maslach& Jackson, 1985).Cynicism and low personal efficacy are associated to the experiences of emotional exhaustion(Maslach, Jackson &Leiter, 1997). The demanding nature of the job in services sector including the civil services results in exhaustion at some point. At this stage the individual engaged in services reduces the efforts to interact with the receivers by creating a distance in offering distinctive services. Additionally the individuals use perceptive responses when they experience fatigued behavior(Cropanzano, Rupp, & Byrne, 2003).Past researches in different contexts have staged cynicism to be an abrupt retort to the exhaustion state (Cropanzano, Rupp, & Byrne, 2003**;**McCarty& Garland, 2007).Further, low personal efficacy is suggestive of low self-respect in perspective to the job performed by an individual. The individual experiences paucity towards the work due to exhaustion and depersonalization. It is quite complex to realize the low personal worth towards the work when facing depersonalization and exhaustion as in several instances they are the causes of the feeling of inefficacy (Maslach & Jackson, 1985; Maslach, Schaufeli & Leiter, 2001). Further, it feels irrelevant to work with the same enthusiasm when a sense of emotional exhaustion seeps in. Gradually, individual starts undermining and evaluating all deeds of the past and present as negative. It also points to extreme demotivating behavior of self (Maslach & Jackson, 1985; Cropanzano, Rupp, & Byrne, 2003; Wiese, Rothman & Storm, 2003). For the purpose of this study the researcher utilized the statements from MBI scale and MBI-GS(General Survey) (Maslach & Jackson, 1981; Schaufeli et al.,1996; Salanova&Schaufeli, 2000). The statements used in the study were like “I feel I am working too hard on my job”. A seven point scale was employed in this study where the respondents were asked to respond from 0 indicating “Never”, 1 “A few times a year”, 2 “ Monthly”, 3 “A few times a month”,4 “Every Week”, 5 “ A few times a week”, 6 “ Every day”.

Stressors

Since the mid-1970s, various studies have been conducted to identify the reasons for law enforcement agents work pressure and their stress level as law enforcement is accepted as the most stressful occupation worldwide (Reiser, 1974; Kroes, 1976; Violanti & Aron, 1994; Toch, 2002; Mikkelsen & Burke, 2004**;** Haque, 2016; Naz & Gavin, 2013; Nix & Wolfe,2017). On the basis of available literature job stressors in law enforcement can be broken down into four main categories i.e. task related stressors (Anshel, 2000**;** Aldwin, 1984; Dick, 2000; Carson, 1987; Violanti &Aron, 1994), organizational stressors (Brown & Campbell, 1990, 1994; Ellison, &Genz, 1983; Molloy & Mays, 1984, Toch, 2002), personal stressors(Brown & Campbell, 1994; Mikkelsen & Burke, 2004), external stressors (Davidson &Veno, 1980; Kroes, 1976, Mikkelsen & Burke, 2004).

In Defense forces, task related stressors also designated as acute stressors include the way in which police officers act and think differently in more stressful situation as compared to less stressful situations

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(Anshel, 2000; Dick, 2000).Law enforcers have to maintain their macho image besides being polite and deal efficiently with stress situations (Perrier & Toner, 1984). Moreover, law enforcement agents are anxious of being killed or injured, shooting, dangerous situations, physical and mental error because of acute stressors (Loo, 1984; Territo & Vetter, 1981; Toch, 2002; Carson, 1987; Violanti & Aron, 1994). Other than fear of being injured or killed the most stressful situation for them is death of their colleagues on duty (Sewell, 1981, Carson, 1987; Violanti & Aron, 1994) and informing the family of deceased officer adds to the stress level (Brown & Forde, 1989; Toch, 2002). Encounters of criminals also enhance the stress level of agents since killing a human being requires a lot of self-conscience, test of wisdom and moral strength (Paton & Violanti, 1999; Toch, 2002). Chronic stressors include structure of law enforcement agents and overload of work such as both qualitative and quantitative work and continuous shifts rotations (Brown & Campbell, 1990, 1994; Davidson &Veno, 1980; Leonard & Tully, 1980). Quantitative work includes performing a number of different tasks simultaneously and qualitative work is related to performing highly complex and dangerous task. This overburden becomes more frustrating when it combines with inadequate utilization of their skills and abilities as they have to perform the task for different ethnic groups and social class and have to handle their personal problems (Leonard & Tully, 1980). Many times police officers feel that they are influenced by concerns that have nothing to do with their own functioning on the job (Kaufman &Beehr, 1989; Kroes, 1976; Reiner, 1991). Staying focused on the objective besides sympathizing with others is difficult and challenging (Bull, Bustin, Evans, &Gahagan, 1983; Sewell, 1994).

Stressors related to organizational structure of the law enforcement agents are known as organizational stressors (Brown & Campbell, 1990, 1994; Molloy & Mays, 1984) such as lack of administrative support of seniors, participation in decision-making, and of opportunities for advancement (Alexander, 1999). Brown & Campbell, (1994) and Alexander, (1999) found that organizational and managerial stressors have more impact as stressors than the daily routine tasks. Studies have additionally demonstrated that absence of sensitivity, lacking supervision and maintaining a lot of paperwork material is evaluated by law enforcement agents as intensely hostile and more stressful (Brown & Campbell, 1994; Toch, 2002; Molloy & Mays, 1984; White, Lawrence, Biggerstaff & Grubb, 1985). Law enforcement agents also have stress related to the way their promotion will be determined. Furthermore, investigating the most difficult and frustrating cases also create very stressful environment for them. These situations require explanations and reporting to the internal agency about their actions and reasons associated with those actions (Toch, 2002; Terry, 1981).

External stressors are created outside the precinct where the external powers come into action like aggravated assaults, public comments, public aggression, media and news reporting, court judgment that might increase tensions and retaliation by public (Perrier, 1984; Davidson &Veno, 1980; White et al., 1985; Kroes, 1976). Law enforcement agents also have to deal with the psychological stressors or personal stressors that encompass the price police officers pay for the conflict between their work and family demand (Brown & Campbell, 1994; Perrier, 1984; Mikkelsen & Burke, 2004).

Reaction of law enforcement agents while they are in stress can be segmented into three primary classes: physiological, emotional, and behavioural reactions. Physiological reaction enhance the chances of increase in number death due to heart attack, cancer and other sever disease (Davidson &Veno, 1980 ; Vena &Petralia, 1998) and various health problems related to stress including obesity, high blood pressure, headaches, stomach problems, sugar, high cholesterol, and various skin problems, anxiety (Davidson &Veno, 1980; Perrier, 1984; Vena &Petralia, 1998). Other, more common emotional reactions to police stress are job frustration, boredom, nervousness, restlessness, anger, emotional exhaustion, depression,

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alienation, and emotional cut-off from various aspects of daily life (Perrier, 1984; Davidson &Veno, 1980; Donovan, 1981 On-the-Job Stress in Policing, 2000; Perrier, 1984). Other than this due to stress there is lack of concentration power and pay they feel more difficult to pay attention to their work, aggression increased among them, marital complications, violence, excessive smoking and drinking, alcoholism, and drug abuse (Beutler, Nusslaum, &Mereddith, 1988; Davey, Obst, & Sheehan, 2001;Terry, 1981; Davidson &Veno, 1980; Violanti et. al.,2017), Behavioural reactions leads to quitting the force, in few cases officers prefer voluntary retirement, increase in number of absenteeism and unpunctuality, reduced efficacy in job performance, errors of judgment, low morale and reduction in the attractiveness of police work as an occupation (Brown & Campbell, 1994; Cooper, Kirkcaldy, & Brown, 1994).

Work Engagement

Vigor, dedication and absorption are the constituents of a positive, gratifying and job oriented state of mind associated with Work Engagement (Schaufeli, Salanova, Gonza´lez-Roma,& Bakker, 2002; Crawford, Lepine& Rich, 2010). Engagement includes cognitive, emotional and physical efforts to enhance performance of the employee where they show dedication towards their job role (Maslach&Leiter, 1997). An individual displaying responsible behavior towards the job role also shows a positive impact on the job performance (Schaufeli, Taris, &Rhenen, 2008). Increased positivity in work engagement leads to better productivity, low non-appearances at work, better quality work and higher profitability. Further, personal principles and values aligned with the work also influence the engagement (Maslach&Leiter, 1997; Maslach, Schaufeli&Leiter, 2001; Brit,2003). According to Kahn (1990), work engagement is that psychological state in which employees are not only cognitively involved in work but also emotionally for the assigned role. Work Engagement is also considered as an obligation that requires intellectual or cognitive and emotive contribution by an employee towards the job role (Rothbard,2001; Shaw, 2005; Saks, 2005; Richman, 2006). Work engagement and Burnout are considered as the two ends of continuum where the former displays positivity throughout the job assigned and the latter shows the negativity that creates subjectivity and improper action in an individual (Schaufeli et al.,2002; Storm &Rothmann, 2003). Work engagement for employees is a part of the field that covers indisposed circumstances of employees to their well-being (Maslach, Schaufeli & Leiter, 2001; Schaufeli, Taris, &Rhenen, 2008). Employees positively engaged in job perform better even under odd circumstances and effectively execute their duties where in three fundamentals of engagement Vigor, Dedication and Absorption (Schaufeli et al.,2002).

Perseverance during challenging situations, employee enthusiasm towards the job, inclination towards the assigned roles, applying necessary determination to the job with higher mental pliability and energy are the constituents of *Vigor* (Schaufeli, Salanova, Gonza´lez-Roma,& Bakker, 2002; Storm &Rothmann, 2003).The resilience incorporated by employees at work increases their capacity to endure tough situations. Employees display willingness to endow effort in completion of everyday tasks at work without getting exhausted. The state of fatigue is not achieved with high levels of energy(Gonzalez-Roma et al., 2006;). The second dimension in defining engagement is *Dedication* that entails stimulus, self-importance, passion and challenges. This dimension shows a strong level of importance given to the work by employee where tasks are accomplished with great enthusiasm (Storm &Rothmann, 2003). The third dimension in assessing the Engagement is *Absorption*, which is characterized by being completely focused and happily immersed in one's work. Past researches propound that the individual is not able to easily disengage self from the work whereby the time passes swiftly (Schaufeli, Salanova, Gonza´lez-Roma,& Bakker, 2002; Storm & Rothmann, 2003; Maslach, Schaufeli & Leiter, 2001; Jena & Pradhan, 2017). In this study the

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scale item for measuring the work engagement were derived and adapted from Utrecht Work Engagement Scale (Schaufeli, Salanova, González-Romá, & Bakker, 2002**;** Schaufeli& Bakker, 2003) as can be observed through table 1. A seven point scale was utilized in the study that varies from 0 indicating "Never", 1 "A few times a year", 2 " Monthly", 3 "A few times a month",4 "Every Week", 5 " A few times a week", 6 " Every day". Table 1 shows the factor loadings of the items sets.

Table 1. Factor loadings

Item sets and factors		***Factor loadings***
Burnout		
BT1	I feel emotionally drained from my work.	.714
BT2	I feel used up at the end of the work day	.716
BT3	I feel fatigued when I get up in the morning and have to face another day on the job.	.781
BT4	Working with people all day is really a strain for me.	.747
BT5	I feel I am working too hard on my job.	.718
BT6	I have become less interested in my work since I started my job	.861
BT7	I have become less enthusiastic about my work	.678
BT8	I doubt the significance of my work	.696
BT9	I doubt whether my work contributes anything	.615
BT10	In my opinion, I am good at my job.	.748
BT11	I can effectively solve the problems that occur at work.	.648
BT12	I feel confident that I am effective at getting things done.	.629
Stressors		
ST1	I feel my salary is insufficient.	.850
ST2	I receive too much supervision and instructions from seniors.	.887
ST3	I think Bureaucracy/paperwork causes additional work strain.	.855
ST4	Public negative verbal comments create more stressful atmosphere.	.922
ST5	I think about the risk of getting injured on duty.	.682
Work Engagement		
WE1	My job inspires me.	.787
WE2	I am proud of the work I do.	.527
WE3	To me, my job is challenging.	.788
WE4	When I get up in the morning, I feel like going to work.	.738
WE5	At my work, I feel bursting with energy.	.718
WE6	I can continue working for very long periods of time.	.561
WE7	Time flies when I am working.	.775
WE8	When I am working, I forget everything else around me.	.768
WE9	I feel happy when I am working intensely.	.658
WE10	I am always immersed in my work.	.708
WE11	I get carried away when I am working.	.718

Note: Significant at p=***

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On the basis of the above review the researchers hypothesized:

H1: Stressors have a significant influence on Burnout.
H2: Stressors and Burnout have a significant influence on work engagement.

Method

Data collection was carried out in the 4 major cities of Northern state in India where the respondents were chosen on the basis of systematic sampling. The self-report questionnaire was circulated from November 2017 till April 2018. Of the 200 questionnaires circulated only 155 questionnaires could return giving a response rate of 77.5%. Out of 155 samples 145 samples were found suitable for the study as rest 10 questionnaires were incomplete and were rejected during data cleaning.

Table 2 displays the descriptive of the characteristics where it can be seen that 68.3% of the respondents are male and 31.7% of the respondents are female (n=145). The identity of the respondents is secluded for maintaining the ethical privacy. The designation section shows a higher percentage of constables in the study (42.1%). Years of service was taken from less than 5 years to greater than 10 years which is shows 59.3% respondents with less than or equal to 5 years of experience.

Table 2. Descriptive statistics

Characteristics		*Frequency*	*Percentage*
Total sample		145	
Gender			
Male		99	68.3%
Female		46	31.7%
Age			
25–35		38	26.2%
36–46		75	51.7%
47/above		32	22.1%
Years of Service			
Less than or equal to 5 years		86	59.3%
5-10 years		50	34.5%
Greater than 10 years		9	6.2%
Designation			
Constable		61	42.1%
Asst. Commandant		47	32.4%
Commandant		15	10.3%
Inspector		9	6.2%
Senior Superintendent		12	8.3%
Director		1	.7%

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Analysis

In this study the validity and reliability of the measures is tested through KMO and Bartlett's test of sphericity and Cronbach's alpha respectively. Moreover, the factorization of the predictor and outcome variable is done by applying Exploratory Factor Analysis and to establish the factors Confirmatory Factor Analysis is applied using IBM AMOS 21 version. Table 3 shows the KMO achieved for the MBI-GS measureis .753, for UWES (Utrecht Work Engagement Scale) is .815 and for Stressors is .858 which is in a good range (above .6) and shows decent construct validity of the measures (Cavana et al.,2001; Kaiser, 1974; Nunnally, 1978). Cronbach's Alpha was applied to test the reliability of the scales. The alpha value for theMBI scale is .902, for UWES is .912 and for Stressors is .834 which is above the acceptable range of .7 and is considered good (Field, 2009).

Table 3. KMO and Cronbach's Alpha

	MBI-GS	*UWES*	*Stressors*
Kaiser-Meyer-Olkin	.753	.815	.858
Cronbach's alpha	.902	.912	.834
No. of items	12	11	5

Note: Significant at $p < .000$.

Further in order to establish the factors a measurement model was generated using the Confirmatory Factor Analysis since in Indian settings studies on the three factors considered in this study are scarce(Ranta&Sud, 2008; Surana& Singh, 2009). Measurement model achieved is a good fit model with indices values in acceptable range Cmin/df=1.779; Comparative Fit Index, (CFI)=.922; Normed Fit Index, (NFI)=.841;Tucker Lewis Index, (TLI)=.909;Incremental Fit Index, (IFI)=.902; Root mean square error of Approximation, RMSEA=.07 (Netmeyer et al.,2003).

The three factor model shows acceptable fit to the data for structural model with Cmin/df=1.890, Comparative Fit Index, (CFI)=.911; Normed Fit Index, (NFI)=.830.;Tucker Lewis Index, (TLI)=.897;Incremental Fit Index, (IFI)=.912; Root mean square error of Approximation, RMSEA=.07. Additionally the results display a significant negative influence of Stressors exhibited on the endogenous variable Burnout (β=-0.082,p<.003). Therefore, the hypothesis (H_1) that stressors have a significant influence on Burnout is accepted. The influence of stressors on Work engagement was negative but insignificant (β= -0.07,p>.000;p=.719). The results show that work stressors have no significant negative influence on work engagement. Moreover, the results also show that Burnout has a significant negative influence on the outcome variable Work engagement (β=-.17; p<.002). Hence, the hypothesis (H_2) instituting the impact of burnout and stressors on Work engagement is accepted.

Additionally, the researcher assessed the correlations among the Burnout factors comprising of emotional exhaustion, cynicism and low professional efficacy with the Work engagement factors Vigor, Dedication and Absorption. The results show that emotional exhaustion has a negative relation with Vigor (r= -.065, p<.000) and Absorption (r= -.047,p<.000) whereas the direction of correlation with dedication is positive but insignificant (r= .070; p=.403). The correlation of second factor Cynicism is negative with Vigor (r= -.147;p=.007), dedication but insignificant (r= -.08; p=.249) and Absorption (r=

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-.138; p=.009). Low professional efficacy displays negative correlation with Vigor (r= -.075; p=.003) and Absorption (r=-.048) but the relation with dedication is in opposite direction and insignificant (r= .11; p=.161). The pattern of correlation results shows negative relation of the factors of Burnout with the work engagement in context to the law enforcement agents. T-tests were applied on stressors with gender as a grouping variable. The results of the analysis show a significant difference within the groups in relation to public negative verbal comments (N=145; Mean, Male=4.50, Female=3.92;Sig=.04;p<.000) as can be observed through table 4. Further statistics also show that salary insufficiency points to higher mean (Male=4.33;Female=4.08) and there is no significant difference between the groups (sig=.15;p>.000). Mean of supervision and Bureaucracy or paperwork is close with no significant difference (p>.000). The findings show that both male and female law enforcement agents are equally afraid of getting injured at work (Male=4.00; Female=4.08;sig=.10;p<.000).

Table 4. T-test descriptive

Items		Gender	N	Mean	T-test statistics	Sig (2-tailed)
ST1	I feel my salary is insufficient.	Male Female	99 46	4.33 4.08	.902 .895	.15
ST2	I receive too much supervision and instructions from seniors.	Male Female	99 46	4.00 3.85	.318 .315	.36
ST3	I think Bureaucracy/paperwork causes additional work strain.	Male Female	99 46	4.08 3.92	.393 .388	.20
ST4	Public negative verbal comments create more stressful atmosphere.	Male Female	99 46	4.50 3.92	2.455 2.425	.04
ST5	I think about the risk of getting injured on duty.	Male Female	99 46	4.00 4.08	.212 .207	.10

CONCLUSION AND IMPLICATIONS

Studies pertaining to the law enforcement agents globally show that stressors have an adverse influence on officers (Malach-Pines &Keinan, 2006). Studies show that getting hurt has higher hostile psychological effect on the law enforcement agents (Violanti &Aron, 1995). In this study the purpose was to assess the impact of stressors on burnout and work engagement among law enforcement agents or police officers. The results of the study show a negative influence of the stressors on work engagement. Besides, the results also show that stressors tend to aggravate Burnout levels among the police officers. The outcomes of the study are in alignment with the past studies conducted in the context to law enforcers (Wiese, Rothmann, & Storm,2003; Mostert, &Rothmann, 2006; Rothmann, 2008; Wasserman,Meiring& Becker, 2018) that show a significant contribution of stressors to Burnout. Table 1 shows a high factor loading (.922) of the public verbal comments or obscene remarks to be a high level of stressor followed by the salary insufficiency. Additionally, the study evaluates the impact of Burnout on the work engagement which is found to be negative after the empirical evaluation. Past studies in this context have shown high levels of Burnout among the police officers (Rothmann, 2003; Malach-Pines &Keinan, 2006). The outcomes of the current study align with the past studies carried out in varying countries (Mostert, &Rothmann, 2006; McCarty, Zhao & Garland, 2007, Malach-Pines &Keinan, 2006). The results re-

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veal that law enforcement agents are inspired by their jobs (WE1= .787) and job challenges show their dedication towards the work (WE3=.788), as can be observed through the factor loadings in table 1.The results of the t-tests applied on five stressors items show no significant difference between the groups except for the use of negative and abusive verbal comments.

Through the results it can be observed that law enforcers feel that their salary is insufficient as per the nature of job. It can also be seen that both the male and female agents equally think about getting injured in the line of duty since, facing dangerous criminals always poses a threat. The supervision and bureaucracy seem to equally influence as stressors on the law enforcers. Few studies show that work participation is an important determinant in reducing the effect of burnout (Atouba & Lammers, 2018) and career satisfaction has also been found to related to burnout among neurosurgeons (Miyasaki et al., 2017). Further studies can consider communication adequacy and employee participation as mediator to Burnout. The results show that there is no significant difference between the groups over the stressors involving security, paperwork and bureaucracy. The results of the study are in line with the previous studies conducted in this context (Storm & Rothmann, 2003; Schauefeli & Bakker, 2004; Mostert & Rothmann, 2006;McCarty,Zhao, & Garland, 2007; Rothmann, 2008). The study is significant for the researchers working in this field in Indian scenario. However, future studies can take stressor dimensions on a broad level which is one of the limitations of this study. Study also doesn't discuss the coping mechanisms that can be considered in impending studies. Further, a larger sample size can be collected from different zones of the country due to diverse culture and ethnicity that will provide extended insights to the Burnout and Stressors.

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Chapter 48
The Contribution of Neuroscience and Health Psychology to Macroergonomics:
Focusing on Workers as Active Agents

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ABSTRACT

When a work system is considered we must focus on people that are part of the system as an active agent that can participate and interact all along the working process. In this process, stress contributes to increasing the probability of diseases and accidents. Therefore, one of the main objectives, from a preventive perspective, is to reduce stress levels. Related to this, the characteristics of healthy organizations will be described as a model to promote health. The objective of this chapter is to offer a broad and multidisciplinary perspective of prevention risk in the workplace centered in the worker, taking the view of neuroscience and health psychology. For that purpose, stress interventions in the organizations and in the individuals will be outlined. Finally, this chapter would finish proposing a preventive intervention to improve healthier work environments, taking into account neurosciences and health psychology. This proposal will be based on improving lifestyle, education for health, and self-respect.

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John Henry he hammered in the mountains
His hammer was striking fire
But he worked so hard;
it broke his heart
John Henry laid down his hammer
and died, Lord, Lord
John Henry (trad. Adapted by Pete Seeger)

GENERAL PERSPECTIVE

John Henry is a traditional character from the history of the United States of America that represents the fight between the man and the machine. The man, John Henry, fighting against the machine to prove that men can defeat the machine; at the end, John Henry wins but finally, due to the great effort, dies. From a humanistic point of view, the need to be superior to the machine is a good view to preserve the supremacy of men in front of the machines; but, this "romantic" view finishes with John Henry's dead. Is it worth it? It is worthwhile dying to demonstrate that one can be better in his job? Is it worthwhile dying/getting sick for a job? That's the point. Fatal injuries related to work are usual and it is necessary to take actions to reduce these fatal consequences.

Considering that macroergonomics is a subdiscipline of Ergonomics which is concerned with the analysis, design, and evaluation of work systems, it is necessary to consider that a new vision of work systems, analyses and evaluation should be done within a wide perspective, trying to avoid mistakes and difficulties from the "classic ergonomics". Recently, Thatcher, Waterson, Todd and Moray (2017) have asserted that "ergonomics should move beyond a Westernised view of worker-organization-technology fit, taking a multidisciplinary approach which engages with other social and biological sciences". From neuroscience, when a work system is considered researchers must focus on people that are part of the system, but not as a mere "mechanical and passive elements" but as an active agent that can participate and interact all along the working process. In this sense, when the authors of this chapter talk about healthy workplaces, they refer to these people that participate of an interactive system. Moreover, every day is increasingly the necessity of person-to-person interaction to increase productivity, due to an important part of the jobs are based on social relationships. Therefore, workers should be the focus to have healthy workplaces. Thus, from a macroergonomic perspective, environmental elements have been related to psychological characteristics and performance (Realyvásquez, Maldonado-Macías, García-Alcaraz, Cortés-Robles & Blanco-Fernández, 2016). Therefore, a new perspective seems necessary to have a more comprenhensive vision of sociotechnical systems and its relation to performance and health.

The main aim of Ergonomics is to find the harmony between efficiency and workers' well-being (health, security and satisfaction) by means of changing or improving working conditions. Considering that Ergonomics is a multidisciplinary discipline that gathers from other disciplines to address more efficiently the problems in workplace, it is surprising that despite taking knowledge from other disciplines there is a lack of addressing more comprehensive of psychosocial factors, especially stress (Serrano & Costa, 2018). Thus, it is considered that broaden the ergonomic perspective would help to cope with workplace issues. Therefore, a prospective view should be defended, not to beat the classical ergonomic perspective, but to contribute with a modern perspective gathering updated knowledge from the world of biopsychosocial sciences. It is well known that scientific knowledge and organizational practices are

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not close as they should (Caetano & Santos, 2017). In this sense, if human being is the central point of workplace more attention must receive neurosciences that dedicate their efforts to investigate human beings' processes.

On the other hand, from a Social Psychology perspective, organizations are complex constructions of the human being. These complex organizations are created by humans, beyond the individual. Thus, the consideration of context emerges as an increasingly exciting dimension; that is, "the substrates of cognitive functions cannot be studied in isolation but that insight into their mechanisms and consequent outcomes can be gained only from the full contextual setting in which they develop and operate" (Aminoff et al., 2009). In this line, social neuroscience seeks to specify the neural, hormonal and even, genetic mechanisms underlying social behavior. All behaviors under work contexts are social behaviors that have consequences at individual, group and the organizational level. In fact, social neuroscience is trying to understand the associations between social behaviors and biological changes and *viceversa* (Cacioppo, Bernston & Decety, 2010). In this sense, one the major concerns in workplace is the healthy factor; that is, the amount of diseases and injuries that occur in workers. Additionally, as it is stated by the World Health Organization (WHO) health is a complex concept that includes psychological and social health. Therefore, neuroscience comprises an important conceptual approach to understand global mental health (Stein et al., 2017). Complementary, a good performance is necessary for an organization; in this regard, self-regulation and goal pursuit should be taken into account due to be an important part of a good performance (Gallo, Cohen, Gollwitzer & Oettingen, 2013).

But what is needed to prevent from diseases or accidents? A great part of the diseases/accidents come from the high levels of experienced stress (Adler, 2007). One important issue about stress is that people are not good to recognize the own stress state. Usually, stress is recognized by people after months or even years of suffering, when the consequences are present. Associated with stress, there is an increase of mental load that is another important risk in work environments (Serrano & Costa, 2018). Therefore, one of the main objectives, from a preventive perspective, is to reduce stress levels and make workers conscious about their levels of stress. In this regard, from a psychosocial perspective, jobs require abilities (i.e. communication, social skills, conflict management, decision making, relaxation, social abilities, self-control, and others) that are necessary to cope with stress, mental load and the diseases related to (cardiovascular diseases, injuries, stress, burnout, among others).

Considering all above, the objective of this chapter is to offer a broad and multidisciplinary perspective of prevention risk in the workplace centered in the worker, taking the view of social neuroscience (including social psychology) as a basis that, to the knowledge, has not been employed in ergonomics, in spite that is a comprehensive sight of human beings in social contexts. Finally, from the Psychology point of view, individual differences will be emphasized as an important factor that should be considered when human behavior is studied. All of this will be considered, with the assumption that productivity should be one of the main objectives (together with the health and satisfaction of workers). In fact, taking care of workers increases *per se* productivity. To carry out this aim, this chapter will dedicate the first part to explain and show what is needed for a healthy workplace, from the point of view of Positive Organizational Psychology. In the final part, a broad conception of prevention risk factors will be addressed integrating neuroscience and health psychology into ergonomics, to offer a long-term prevention based on the worker responsibility and the ability to detecting psychosocial risks.

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HEALTHY ORGANIZATIONS

Trying to optimize the functioning of an organization is not new. In the nineteenth century, with the Second Industrial Revolution, with the rise of companies and new forms of work, it was considered essential to use scientific knowledge to study and optimize each position, so that workers could reach their maximum performance and satisfaction. This idea came up with the engineer Frederick Winslow Taylor and the concept "scientific management" (1984), who firmly believed in the existence of "one best way"; that is, to analyze the characteristics of the work to assign it to the worker that best fits in it. However, it was considered a reductionist proposal focused on mechanical aspects, such as the division of tasks, which forgot intrinsic characteristics of human being, such as motivations, goals or needs (Waring, 2016).

Human factors began to gain importance after the studies of the psychologist Elton Mayo at the beginning of the 20th century (Hawthorne Plant experiments). These studies began with the aim of studying what working conditions favored performance: schedules, luminosity, temperature, ...; however, to the surprise of Elton Mayo, the performance increased in any of the conditions that were tested; then, improvement was interpreted to the fact that all workers were being supervised by the researchers (Sedgwick & Greenwood, 2015). Thus, if the mere fact that a worker felt "special" served to increase their performance, it was evident that Taylor's rational approach, where the worker worked solely for money, lacked complexity.

Therefore, and despite its limitations and methodological criticism (Peiró, 1983; 1984, Veen and Korver, 1998), Hawthorne's studies served as a starting point to studying human nature in its total complexity within the organizational context, something that, would lead to the development of the Psychology of Organizations and Human Resources. The European Network of Organizational Psychologists (ENOP) defines the Psychology of Organizations (or Organizational Psychology) as a subdiscipline of psychology that is responsible for the study of collective behavior in relation to the sociotechnical system called "organization" (Martínez, Ramos and Moliner, 2015). This discipline analyzes and studies all the components of the organization, both individually and collectively, on the basis that workers are people that have personality traits, values, attitudes, cognitive limitations, objectives, etc.

On the other hand, thanks to the contribution of Martin Seligman with the development of Positive Psychology or the "scientific study of the optimal functioning of the human being" (Seligman, 2000), Positive Organizational Psychology has also begun to be discussed (Negruti, Hristova, Larsen, Krumov, 2015). This discipline goes beyond the weaknesses of the organization, also influencing its potential to promote its optimal development and achieve a healthy organization (Salanova, Martínez & Llorens, 2014; 2005).

How to Get Healthy Organizations?

As defined by Salanova (2008), healthy organizations are all those organizations that "make systematic, planned and proactive efforts to improve the health of employees through good practices related to the improvement of tasks (i.e. designing and redesigning of positions), the social environment (i.e. improving communication) and the organization (work / private life conciliation strategies)". But why is it convenient to get a healthy organization? Some results have been associated with these organizations at different levels (Martínez, et al., 2015):

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- Individual: the presence of resources in the workplace is associated with employee welfare, such as high levels of engagement, job satisfaction and performance. Other results also mentioned in the literature are the commitment of the worker and the low turnover and intention of abandonment.
- Group: organizational resources and engagement (measured at the team level) are related to collective outcomes such as the service climate and collective performance.
- Organizational: a key result of healthy organizations is the satisfaction and loyalty of clients, social responsibility and economic-financial results.

Based on these results, it is essential to promote healthy organizations. However, this goal is not simple. There are many variables to consider and it seems complicated to be able to address them all. Therefore, in order to simplify the task and based on the Empirical-Comprehensive Healthy Work Organization (ECOLS) model (Wilson, DeJoy, Vandenberg, Richardson & McGrath, 2004), the authors of this chapter will offer a perspective to detect the main variables and explain what strategies to use to address them.

Job Design

Job design involves, on the one hand, (1) the characteristics of the task; that is, its complexity, duration, physical conditions in which it will develop (temperature, luminosity, noise, etc.) and (2) the personal characteristics of the worker.

Today, it is known that human beings show a limited rationality (Thaler, 2016; Tversky and Kahneman, 1974, Simon, 2000, Sunstein and Thaler, 2003) and are influenced by their emotions, values, attitudes, personality and experiences when interpreting their work context. After this conceptual evolution, it is understood that, in reality, the objectivity of the characteristics of work is not as important as the worker perception. In addition, not all workers have the same motivations. While some people may aim for a higher salary (extrinsic motivation), there will be others who value more a job that allows self-actualization (Maslow, 1954; 2016), be creative, have autonomy, assume responsibilities and feel that their work is being productive (intrinsic motivation). Therefore, if an optimal work design is intended, the objective characteristics of the position and the personal characteristics of the worker must be analyzed in interaction. All of this point to the need to individually address each specific situation, taking into accounts both dimensions to achieve the greatest possible adjustment.

Organizational Climate

By organizational climate is understood the individual perceptions that members of an organization have regarding their social environment (Martínez, et al., 2015); that is, their personal experience, although to some extent shared with some or all of the other workers, regarding to the work environment. Many studies relate different perceptions of climate to work performance, the involvement of workers, satisfaction (eg Patterson et al., 2005, Parker et al., 2003, Ostroff & Bowen, 2000, Reichers & Schneider, 1990; Vaca, Vaca & Quintero, 2015; Zambrano, Véliz & Barzola, 2017) and, ultimately, with its importance to maintain a healthy organization (Prado, 2014; Vega, Gálvez & Santamaría, 2017). Work climate is related to three relevant constructs: social support, communication and participation and involvement.

Social support is "the feeling of being appreciated and valued by other people and of belonging to a social network" (Barra, 2004), and it has been frequently linked to maintaining health and overcoming the disease (Almagiá, 2014; Hakulinen, et al., 2016; Holt-Lunstad & Uchino, 2015; Brodman, 1993;

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Kaplan, Sallis & Patterson, 1993). The lack of social support within an organization is an important risk factor in the emergence of Burnout (Aranda, et al., 2004). Therefore, it is a key to favor a climate of warmth and companionship that allows employees to feel integrated into the social network of the organization. For this purpose, it is proposed to increase accessibility, for example, through group leisure activities or self-help groups within the work, which favor the link between employees.

On the other hand, communication is the process by which members of an organization are interrelated by exchanging information, establishing links and commitments, delegating, supervising and assuming functions (Moriano-León, 2005). Optimal communication is necessary to maintain a good organizational climate and employee's satisfaction (Pellegrin & Curry, 2011). Finally, participation consists in an active role in the activities and decisions that are made within the work environment. There is a clear relationship between those employees who participate and autonomy and the increase in motivation (Martínez, et al., 2015). Being motivated is the key to developing engagement, "a psychological state characterized by vigor, dedication and absorption or concentration at work." (Schaufeli, Salanova, González-Roma and Bakker, 2002; Bakker & Albrecth, 2018). Those people who experience engagement, are more committed and involved and strive more in their work, establishing a link with it and valuating more their role and tasks (Norton, Mochon & Ariely, 2010). In addition, engagement would be related to higher performance, well-being and the decrease in absenteeism (Schaufeli, Salanova, González-Roma & Bakker, 2002). Therefore, it seems appropriate to promote the delegation of responsibilities and the decentralization of authority so that workers participate in the organizational decisions in order to experience greater autonomy, involvement and motivation.

Labor Perspectives

Labor perspective refers to the perception that workers have about the stability and security in their job, as well as the possibility of advancing in their professional career and feeling satisfied. In relation to this construct, in this chapter the authors will refer to the perception of justice and self-realization.

The perception of justice refers to the "personal evaluation of the ethical and moral standards that characterize the organization" (Omar, 2015), and will depend on organizational practices and policies, mainly focused on leaders (Peña-Ochoa & Durán, 2015). Many authors (i.e. Omar, 2015; Cheng, 2014; Moon, Hur, Ko, Kim, & Yoon, 2014; Bal, de Lange, Ybema, Jansen, & Van der Velde, 2011) point to a clear relationship between the perception of justice and a greater commitment and involvement with the organization. In addition, perceiving a climate of justice maintains the confidence of workers, an aspect that, according to Wei-Yuan, Shang-Ping, Chwei-Jen, & ChinFang (2013), links organizational justice with commitment. Omar (2015), also highlights, that justice is directly related to an increase in performance and job satisfaction. Some practices that contribute to developing the perception of justice would be transparency, explanation and justification in decision-making, attention to employees, or the exercise of voting to promote an organizational democracy.

On the other hand, self-actualization would be the need that, according to Maslow (1954; 2016), many individuals express that, far from wanting a higher salary, they prefer to transcend, develop their skills, be creative, and leave their mark. It is necessary, therefore, to analyze the real motivations of workers to identify which elements is an incentive for them and to improve their satisfaction and performance. Otherwise, wages can be raised and economic bonuses can be provided that do not produce beneficial effects, or even harm (Ariely, Gneezy, Loewenstein, & Mazar, 2009; Chib, De Martino, Shimojo, &

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O'Doherty, 2012), when it would be better to promote tasks according to this intrinsic motivation of self-actualization.

Central Organizational Attributes

This domain is mainly related to the attitudes, values and policies adopted by an organization (Martínez, et al., 2015), that deals with the culture and organizational practices in more detail.

Pellegrin & Currey (2011) defined the organizational culture as values and beliefs that guide behavior in the workplace, whose strength and stability is related to the performance of the organization (Salas-Arbeláez, Solarte & Vargas, 2017; Sorensen, 2002). Culture goes beyond people (Ashkanasy, Wilderom & Peterson, 2011), so, unlike climate, it is a much more stable element that complicates its approach to the point of suggesting a preventive proposal: people who want to access to an organization should know their culture and if it is related to their beliefs to decide if it is convenient to enter, before being immersed in it. In the case of organizacional culture, each intervention must be developed *ad hoc*, depending on the particular needs that require modification. For example, to flexibilize a highly controlled and hierarchical organization, it would be useful to apply group dynamics that help establish links and for supervisors to trust subordinates more, granting them greater autonomy and flexibility. Or perhaps, it would be useful to provide formation that develop the ability to manage stress and pressure so that employees can better adapt to a culture of innovation that constantly faces moments of uncertainty and risk decisions.

On the other hand, organizational practices refer to all those strategies that are exercised in the workplace by the leaders and/or supervisors that influence the employees. Throughout the chapter the authors have already mentioned several practices that would favor the development of healthy organizations, for that reason, here, besides inviting to review those already commented, the authors will limit themselves to mention the distinction of organizational practices proposed by Salanova (2009): organizational (selection and socialization of new employees, work-life balance strategies, employability development), social (creation of open channels for organizational communication, promote healthy leadership styles, foster a culture of quality customer service and to the citizen) and of task (to combine tasks to avoid boredom, development of feedback channels, propose challenging tasks). It should be noted, however, that there are no ideal practices and that, as stated by Salanova (2009), "each organization should develop its own menu of good practices taking into account its own culture and values".

All the above aspects are basic when it comes to understanding the welfare of organizations and workers, and they entail the need for a psychosocial adjustment between the worker and his work. In this sense, psychological adjustment can be reach with a balance between (1) the needs and competencies of the employee and (2) the demands of the work environment (Cullen, 1995). This relationship necessarily reminds the demands-control model (Karasek & Theorell, 1990). Demands-control model (also called the "job strain model" or DC) emphasizes different aspects in the relation between jobs and health. Work stress and its effects on physical and mental health are not only the result of aspects of the job, but rather of the joint action between the demands ("job demands") and the degree of perceived control ("decision latitude"). Thus, the model identifies two basic aspects within the work situation: work demands and the possibility of control. According to this model, job stress appears when a situation is characterized by high demand and low latitude decision (reviewed in Serrano & Costa, 2018). When people talk about the possibility of control, in reality they are talking about the subjective perception of control, that is, it is the worker who perceives that there are insufficient resources to face demands. Lazarus and Folkman (1984), affirmed that an event would only be a stressor (or will be perceived as a

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demand) when people perceive it, and this evaluation "will depend on the coping strategies, the individual and their previous experience". In this sense, stress, although it is an adaptive response of the organism (can cope with and solve a situation), can become chronic and harmful if it is frequent; that is if the working conditions are not adequate or the demands are always perceived as very high. Thus, chronic stress is related to various pathologies and negative moods that affect the health and performance of the worker (Serrano & Costa, 2018). For example, many studies point to its immunosuppressive effect (i.e. Borrás, 1995, Gómez-González & Escobar, 2006; Pellicer, Salvador & Bénet, 2002; Selye, 1936, 1950), facilitating the appearance of diseases and difficulting their cure; others relate stress to the greater risk of the appearance of cardiovascular pathologies (i.e. Cohen, Edmondson & Kronish, 2015; Kivimäki & Kawachi, 2015; Lagraauw, Kuiper & Bot, 2015). In addition, stress has also been linked to the feeling of demotivation and dissatisfaction, lack of involvement with work, poor performance and the desire to leave (i.e. Barkhuizen, Rothmann & van de Vijver, 2014; Gracia, 2015; Padula, Chiavegato, Cabral, Almeid, Ortiz, & Carregaro, 2012; Sonnentag, Mojza, Demerouti & Bakker, 2012).

However, it is important to remember that a stress must be perceived by the worker and this will depend on their individual characteristics. Therefore, the employees should be empowered; that is, provide coping strategies and improve their abilities, so that they feel more effective to cope with stressors (Grau, Salanova & Peiró, 2012) or even prevent their appearance.

A NEW PREVENTION PROPOSAL TO BENEFIT OF HEALTHIER WORK ENVIRONMENTS FOR HUMAN WELL-BEING

Previous section has finished emphasizing the need to provide empowerment and coping strategies that reduce the likelihood of stress and, as a consequence, of accidents, errors and reduction of workers' performance. For this, there are numerous effective interventions. However, accidents and workplace deaths continue, which makes believe that a broader approach is necessary. Thus, as stated at the beginning, the purpose of this chapter is to optimize organizations to be healthy places where workers do their jobs efficiently without compromising their health, and even improving it. Only in that case, companies will get healthy employees. Thus, healthy employees are characterized by high self-efficacy, optimism, resilience, energy, motivation, confidence and engagement. Therefore, promote these types of employees seems the smartest option to increase the success of the company. However, instead of worrying about promoting healthy workers, organizations and workers are usually limited to trying to reduce stress through organizational or individual interventions (Colligan & Higgins, 2005). The following section is dedicated to show strategies to reduce stress.

Strategies to Reduce Stress

Although stress is a problem that is perceived individually, when talking about work stress, the authors of this chapter mean that a significant number of workers are submitted to stress and that it is due to working conditions. Therefore, it is assumed that these are not optimal and are susceptible to intervention. In this sense, interventions are usually carried out to solve a problem already generated. On the other hand, work stress can be difficult to specify in an organizational intervention, as well as assessing whether this has been successful, and this generates distrust when investing in interventions that improve the management of the problem. However, when the problems begin to translate into negative consequences

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regarding productivity and benefits, the need for intervention begins to be recognized. In fact, the new trends in business management go in the direction of emphasizing and protecting "human resources".

The organizational strategies of intervention can be classified based on different aspects (Michie, 2002): worker control, information and communication systems, management styles, task interest, conflict regulation, socialization process and training.

- **Worker Control:** One of the measures that can be taken to reduce the risk or impact of work stress is to increase the degree of control. This will positively influence health and satisfaction. The degree of control should be about what the employee should do (his / her competences and functions, results, among others) and how he / she does it. In addition, the worker should be able to regulate their work and rest times, as well as participate in aspects related to their work. Obviously, this is the ideal and always taking into account that the worker meets the objectives assigned to him. Control involves good training and responsibility, so the worker has to be well trained.
- **Information and Communication Systems:** The information systems of companies must be precise as they affect all workers. Thus, the information that workers have must be precise (this does not necessarily mean giving all the details), consistent with other information, as well as with the decision making of the organization. The language must be adapted to the receiver (so the level of complexity must be varied depending on the worker). On the other hand, the treatment and transmission of information must be adequate and accessible. In this regard, an information system must allow the worker to know what is expected from him (tasks or objectives to be met) and get feedback on the work done. In this sense, workers and managers must be trained in communication so that exactly what is transmitted is conveyed and not what is understood. Therefore, messages must be clear in a context where there is no noise and the worker is receptive to that message. All this will greatly reduce the risk of work stress due to communication mistakes.
- **Management Styles:** In an organization an appropriate design of the hierarchy is required and a normative and regulatory system that is accepted by the workers. For this purpose, it is recommended to have an effective style of leadership focused on the democratic and participative direction. Therefore, the manager must allow the worker's effective participation making him see that he is part of the organization. On the other hand, the regulations within an organization must be affordable and logical and understood by all employees. In this line, working with clear objectives is of great acceptance since it allows to reach the objectives giving a certain degree of freedom to the worker.

In short, the most effective supervisory styles are those that focus on employees considering their characteristics. For this, managers should be trained in human resource management skills, and specifically in social skills, to avoid management styles that may be negative to subordinates. All of this ends up impacting on a greater identification of the worker with the company, increasing their sense of responsibility, as well as increasing the degree of autonomy, which will result in greater control and in a reduction of stress (provided that the work is well planned and workers have the necessary skills to perform the tasks).

- **Interest of the Task:** One aspect that greatly increases the feeling of stress is the monotony and boredom at work. Thus, in those jobs that have a high degree of monotonous or tedious tasks it is recommended the rotation of positions (that the workers do not do the same task throughout the

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day), modifying the way of doing the work or increasing the degree of complexity of the work. In this sense, involving the worker in decisions about their tasks will increase the feeling of belonging and will give a greater degree of satisfaction (reducing the degree of stress).

- **Conflicts:** A basic aspect to reduce work stress is to reduce the number and degree of labor conflicts. Any conflict will cause an increase in the stress response and a reduction in well-being. Therefore, proper management of the conflict is necessary. For this, the adequate training of the workers, as well as the clarity in the definition of positions, will allow the reduction of labor conflicts. On the other hand, the implementation of mediation protocols will allow conflicts to be resolved based on rules.
- **Socialization and Training Processes:** In general, all the above strategies are aimed at the organization. However, there are other interventions focused on the individual that are also very effective. In this sense, the processes of socialization of the new workers are basic actions for the integration and knowledge of the new incorporations. This greatly reduces the stress of the "new" worker by having contacts (including a "guide") that will make it easier to know the company. On the other hand, giving the right training for the position that is going to be covered is fundamental for the reduction of stress. Training refers to training in job-specific skills and training in social skills and management of the position itself. In addition to these "formal" skills, knowing the ins and outs of the organization will also allow the worker to predict possible changes in the organization. In short, for the reduction of stress the worker must have skills that allow a better adaptation to the position and the company.

In summary, increasing the degree of control, reducing conflicts, knowing how to manage people and adequate training are factors that help reduce the level of stress in organizations. However, all this does not guarantee success. For an intervention to be effective there are a number of aspects that will increase the probability of success. In particular, any intervention must be ordered and reflected, in addition to having the medium / long term support of the management staff. On the other hand, an adequate risk analysis must be carried out, identifying them adequately, analyzing them and assessing the causes. With this, the intervention proposal must be designed in detail: knowing how to do it; who and where it will take place; when; what stages it will take; to which groups it will be directed, etc. Then carry out the intervention as planned and later evaluate if the intervention has been successful. Finally, it is essential that there is a follow-up and subsequent control to avoid that the risk factor turn again. All this must be complemented with a specificity of solutions regarding the context and using professionals with experience in the field of organizational intervention. Last but not least, there should be worker participation allowing their collaboration in the intervention. In short, a global and integrated intervention within the organization would be the most appropriate to prevent or solve the problems of stress in companies.

Measures of a global, organizational and collective nature are the measures that are usually recommended in organizational environments. However, there is another type of individual intervention that would consist of providing workers with strategies to adapt to the work environment. All individuals are exposed to stress and its consequences. Therefore, stress prevention is the optimal option. But, what are some of the preventive strategies that can serve as protective factors? Here there are some of the stress prevention strategies that, from Psychology, are recommended most frequently:

- Having social support: as mentioned previously, social support buffer stress.

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- Training of social skills: being able to relate more efficiently, be assertive and properly handle criticism would be protective factors against stress.
- Change negative thoughts into positive ones: negative thoughts have a direct influence on how people value their self-concept and self-esteem, reducing them and believing themselves less able to cope with stress, with its consequent harmful consequences.
- Interpret properly difficult events: assess them as a challenge and not as a threat.
- Time management: a good distribution of tasks helps to keep calm and reduces anxiety and stress.
- Time for leisure: leisure is necessary to break the monotony, which also generates stress, and it is important to free oneself from the burdens for a while.
- Maintain an active style of coping: it is possible to request help and even receive training to know how to perform a task better, or solve a problem, but it is convenient to face it and not procrastinate, otherwise, it will last over time and its effects will be worse.

Both preventive and intervention strategies on stress are intended to increase control in workers. However, although many companies know and follow the guidelines mentioned above and aim to achieve such objectives that would result in health, employees are at the same time facing with contradictory results: in the 21st century a real pandemic of stress is raging and causing harm. These facts lead researchers to think that, perhaps, due to many efforts to intervene in organizations, the focus should be placed on the knowledge provided by the behavioral and neurosciences as key disciplines to understand the human being in interaction with their psychosocial and organizational environment.

Beyond the Interventions That Reduce Stress

From Psychology and Neuroscience many and very diverse techniques are known that people can use to learn how to manage and reduce stress. However, generally within organizations, this knowledge is not usually taken into account or is unknown. These facts lead to think that, perhaps, in spite to many efforts made to intervene in organizations, the focus should be placed on the individual, going beyond a much more preventive level.

From the psychology point of view, there are several stress interventions programs that are effective to reduce the consequences of stress or to cope with it. All of them are adequate to teach workers in order to reduce the negative effects of stress. Briefly, stress interventions can be classified depending on the principal effects: physiological effects (reducing the levels of physiological arousal produced by the stress; i.e relaxation or breathing techniques) or cognitive effects (modify the coping of people in stressful situations; i.e. inoculation of stress, mindfulness, problem-solving, among others). All these techniques are adequate to reduce the negative effects of stress or improve coping. However, these techniques are relegated to the individual. Thus, it is found that work stress generates many negative consequences such as stress-related diseases (cardiovascular, metabolic), performance reduction and job dissatisfaction. In the case of diseases related to stress, science is emphasizing the importance of encouraging healthy life habits to avoid or reduce diseases such as cardiovascular, metabolic or psychological that are directly related to stress. In this sense, the promotion of a healthy lifestyle entails the realization of physical activity and a healthy diet. It has been demonstrated that the performance of moderate and regular physical activity prevents the appearance of cardiovascular and psychological diseases (Mikkelsen, Stojanovska, Polenakovic, Bosevksi & Apostolopoulos, 2017), as well as a healthy diet reduces the risks of cardiovascular and metabolic diseases (Dawson, Dash & Jacka, 2016; Hoerr, Fogel & Van Voorhees, 2017).

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Therefore, in addition to the actions that can be taken by organizations to reduce stress for workers, certain behaviors or a healthy lifestyle can reduce the likelihood of stress-related illnesses or allow a better coping with stress (Adler, 2007). In this regard, from the perspective of the authors of this chapter, it is considered that stress reduction or prevention programs should be complemented with distal prevention programs from the work situation itself; that is, the proposal of this chapter would be that, given that a healthy lifestyle prevents the appearance of some diseases related to stress and that there are psychological techniques that improve stress behaviors, prevention should be focused on anti-stress lifestyles, that at least, reduce the probability of the appearance of the negative consequences of stress. We consider that these healthy behaviors should be part of the lifestyle of people, so it should be taught from school, fostering in children physical activity and healthy eating as basic elements of health in general, as well as teaching of psychological techniques (for example, relaxation, problem solving or mindfulness techniques, among others) that would be useful to shape a healthy psychological lifestyle. All this would result in a better coping with work environments, based on a lifestyle that would be contrary to stress and therefore its negative consequences. In this sense, Neuro-education is a promising new perspective (Monfardini, Reynaud, Prado & Meunier, 2017) that links neuroscience and education in order to "to create a better understanding of how people learn and how this information can be used to create more effective teaching methods, curricula, and educational policy" (Carew & Magsamen, 2010).

Therefore, the proposal of this chapter aims at a distal prevention, educating people from the school in healthy lifestyle (physically, psychologically and socially), using the knowledge of neurosciences, who will later face their jobs and sources of stress in a more efficient way and who will also have an organism more prepared to suffer the negative consequences of stress. On the other hand, and associated with the above, it is also considered that it would be necessary to train in a "universal" occupational risk prevention from school in order to teach children their labor rights and to avoid, for example, the abuses / excesses that may be committed in the work context, as well as, his obligations and responsibilities. This section emphazises the need to train workers in the limits of what is healthy and what is not; from the experience of the authors of this chapter, they have detected workers who consider normal tolerate high levels of stress or labor conflicts, which gives them to understand that workers assume certain working conditions as normal, when they may not be. That is why, in such risk prevention training it would be necessary to emphasize self-awareness about the protection of one's health; that is, working people must know discern when working conditions can cause health problems.

In short, the proposal of this chapter proposal aims to promote healthy lifestyles to have workers who know to manage their work so that reduce the negative consequences. In this way, employees would have committed, and they would know their rights and that would make them more active in their jobs and in the long run they would get sick less, producing, ultimately, greater benefits.

CONCLUSION

In conclusion, this proposal is based on improving life-style, education for health and self-respect, considering that a long-term prevention will be more effective than a short-term preventive approach. The reach that are expected from this proposal is not only prevent psychosocial risk factors (stress or burnout) but physical risks, taking into account that the proposal is focused on the individual as an active agent that is worried (and responsible) about his health; that is, the most important thing is that workers must take care of their own. This perspective goes beyond organizations but governments, trying to capture

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the attention of politicians to propose a complementary model of education useful to learn behaviors about healthy work behaviors and, in consequence, to have healthy workplaces.

In short, the most effective is to make global interventions that reduce psychosocial risk factors but that take into account the worker in terms of their abilities to cope with stress. Consequently, this comprehensive intervention will improve the functioning of stressed people making it more efficient in the environments as well as improving the organization, in terms of productivity and quality.

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Chapter 49
Industry Process Safety:
Major Accident Risk Assessment

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ABSTRACT

This chapter deals with the issue of process safety in industrial companies and major accident prevention. In the present-day technologically advanced world, industrial accidents appear ever more frequently, and the field of major accident prevention has become a dynamically developing discipline. With accelerating technical progress, risks of industrial accidents are to be reduced. In the first part, possible approaches to quantitative risk assessment are presented; and continuing it focuses on the system of risk management in industrial establishments. This chapter aims at providing experiences, knowledge, as well as new approaches to the prevention of major accidents caused by the implementation of the Seveso III Directive.

INTRODUCTION

In the past and also recently, major accidents have represented, owing to their consequences on human health, property and the environment, important events that should be avoided. The need to assess objectively the risk, to which employees or populations are exposed in connection with the production, processing, storage and transport of hazardous materials, appears. What will enable the regulation or management of risks to employees and the surrounding environment is only adequate evaluation.

The aim of major risk prevention is to operate process installations at an acceptable societal level. Risk acceptability limits can differ depending on the maturity of the state, the size of establishments and a number of other factors that must be, however, included into the analysis and assessment of risks.

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The chapter describes benefits of carrying out the risk assessment. The results of risk assessment brings information on the identification of hazards to possible targets of impact; the targets can be employees and installations of the establishment, the surrounding human population and the environment. Risk assessment presents information on possible preventive means and risk reduction priorities. Results of analysis assess preparedness for accidents and it is a source of information for emergency plan preparation.

The area of major accident prevention represents a relatively new branch of science. Nevertheless, transportation accident prevention requirements are an outgrowth of this branch. The first approach is to evaluate stationary risk sources with the largest amount of dangerous substances. However, dangerous substances limits have been decreased (amendments of Seveso Directives) and current attention was moved to so called "unclassified risk sources" and to mobile risk sources. Greater and greater amounts of dangerous substances are transported by road and rail. A growing interest in the subject area is also related to the threat of terrorist actions, possibly involving the stationary risk sources or the transport of dangerous substances.

The objectives of the chapter are to promote area of process safety for prevention of industrial accident.

BACKGROUND

Process safety focuses on preventing fires, explosions and accidental chemical releases in chemical process facilities or other facilities dealing with hazardous materials. Process safety considers a wide range of technical, management and operational disciplines coming together in an organized way. Main focus is on design and engineering of facilities, maintenance of equipment, effective alarms, effective control points, procedures and training. Process safety generally refers to the prevention of unintentional releases of chemicals, energy, or other potentially dangerous materials during the course of chemical processes. The consequences of so call major-accident can have a serious effect to the plant and environment.

By Seveso III Directive (Seveso, 2012) 'major accident' means an occurrence such as a major emission, fire, or explosion resulting from uncontrolled developments in the course of the operation of any establishment covered by this Directive, and leading to serious danger to human health or the environment, immediate or delayed, inside or outside the establishment, and involving one or more dangerous substances.

In the world, a number of major accidents have occurred; to the best known of them, FEYZIN (France – 1966), FLIXBOROUGH (Great Britain – 1974), SEVESO (Italy – 1976), BHÓPÁL (India – 1984), HOUSTON (USA – 1989), and others belong. The majority of significant accidents are described in the specialized literature in detail, see e.g. (Lees, 2005). Information on major accidents taking place in the countries of European Union is collected in the Joint Research Centre, MAHB (Major Accident Hazards Bureau) in Italian Ispra. The Major Accident Reporting System (eMARS) was established to handle the information on major accidents submitted by Member States of the European Union to the European Commission in accordance with the provisions of the Seveso Directive (eMars, 2019). Currently, eMARS holds data on more than 980 major accident events (by September 2019, see Figure 1).

In some countries, statistics on accidents involving the transport of dangerous substances are recorded. For example, in the U.S. Department of Transportation (DOT), PHMSA - the Pipeline and Hazardous Materials Safety Administration has public responsibility for the safe and secure movement of hazardous materials to industry and consumers by all transportation modes. Argonne National Laboratory (ANL, 2000) also reports on transport risk in the USA. The purpose of this National Transportation Risk As-

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sessment (NTRA) study was to quantitatively characterize the risks associated with the transportation of selected hazardous materials on a national basis. Considering fatality risks on a per-ton-mile basis, the risks from LP gas substantially exceed the risks for gasoline, TIH materials (TIH - toxic by inhalation), and explosives (see Figure 2).

Figure 1. Numbers of EU major-accidents in database eMARS (eMARS, 2019)

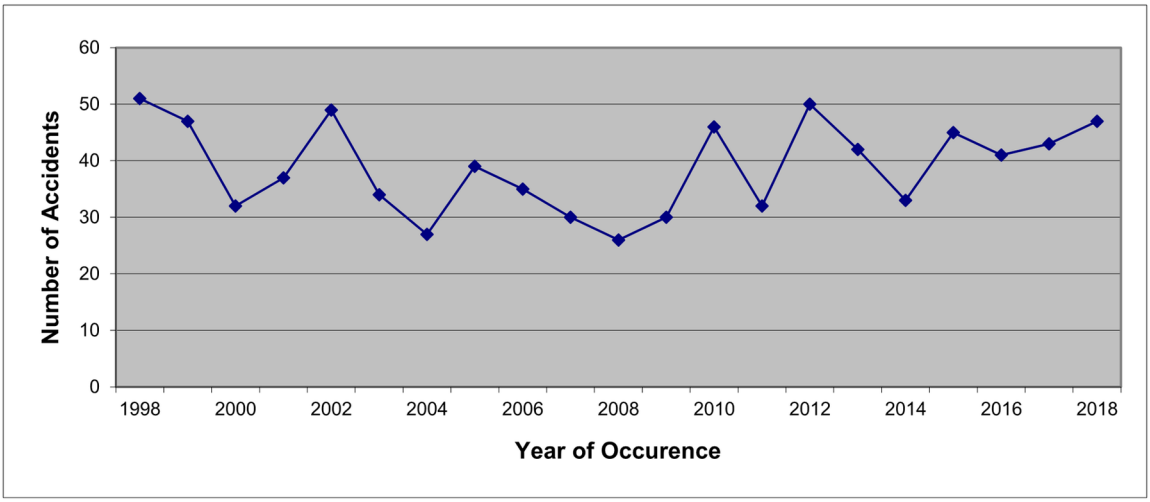
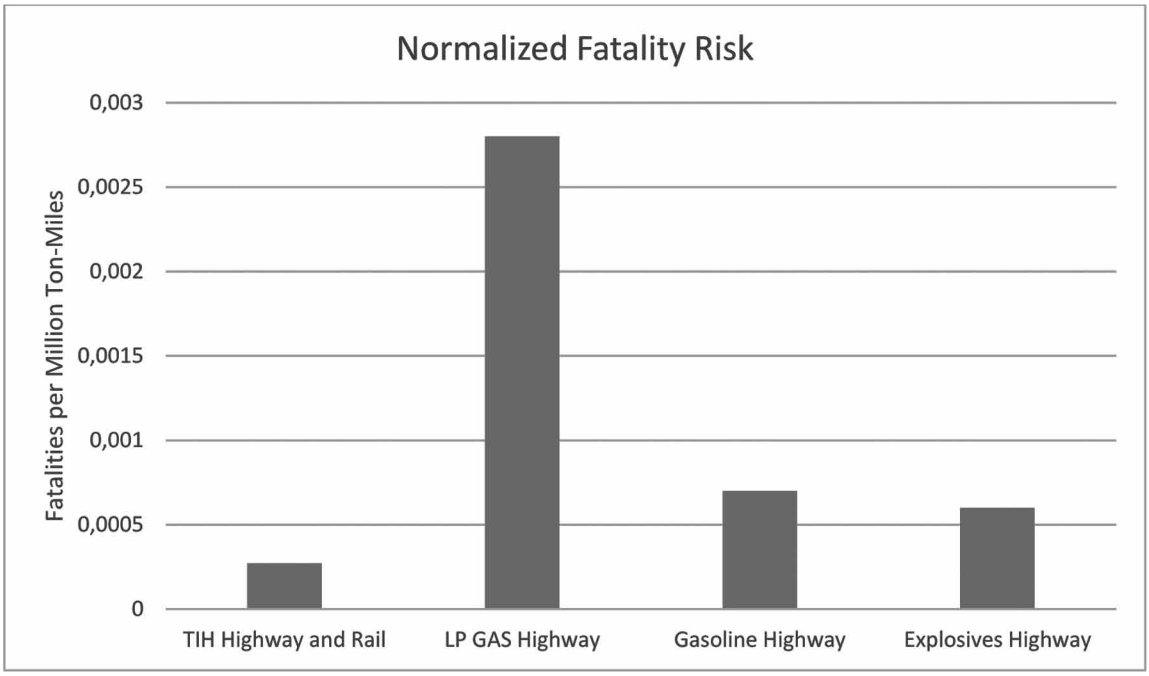


Figure 2. Fatalities normalized by commodity Flow (ANL, 2000)



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Well known database is ARIA - the Analysis, Research and Information on Accidents Database operated by the French Bureau for Analysis of Industrial Risks and Pollutions (BARPI). ARIA coverage geographically mainly France and Europe, but is well documented for accidents anywhere worldwide, covers more than 30 000 accidents. (Salvi, 2017)

Accident databases are an important source of information for risk analysis, especially for determining the probability of scenarios.

After a lot of accidents in the world and especially after an accident in Italian Seveso (1976), the Directive 82/501/EEC on the Major Accident Hazards of Certain Industrial Activities – designated as Seveso Directive was prepared and issued in the framework of European Union. In the year 1996, an amendment to the Seveso Directive 96/82/EC - Control of Major Accident Hazards Involving Dangerous Substances – known under the name Seveso II was made. Modifications in the Seveso II Directive in the year 2003 (No. 2003/105/ES) are connected with reactions to major accidents in previous years – the release of cyanides from a tailing pond of a mine at Baia Mare in Rumania (2000), a fire in a firework storage facility in Enschede in the Netherlands (2000) and a fire and explosion in a French factory for fertilizer production in Toulouse (2001). Finally, the so-called Seveso III Directive (Council Directive 2012/18/EU of 4 July 2012 on the control of major-accident hazards involving dangerous substances) entered into force.

Legislation now covers twelve thousand industrial sites across the EU (Salvi, 2017) where chemical substances are used or stored (upper / lower tier establishments). The latest modification of this Seveso Directive brought about the unification of the classification of dangerous chemical substances in the area of prevention of serious accidents in accordance with so called CLP (Regulation (EC) No 1272/2008).

More recent major accidents exerted a novel impetus on process safety, for example:

- Texas City Refinery explosion (March 23, 2005): An explosion occurred at a BP refinery in Texas City, Texas. Over 100 people were injured, and 15 employees were confirmed dead.
- Fukushima Daiichi nuclear accident in Japan (March 11, 2011): A Nuclear accident, where no direct deaths but a few of the plant's workers were severely injured or killed by the disaster conditions resulting from the earthquake and tsunami.
- Fertilizer plant explosion in West, Texas (April 17, 2013). An explosion occurred at the West Fertilizer Company storage and distribution facility in West, Texas, while emergency services personnel were responding to a fire at the facility. At least 14 people were killed, more than 160 were injured and more than 150 buildings damaged or destroyed.
- Binhai, Tianjin, China (August 12, 2015): Two explosions within 30 seconds of each other occurred at a container storage station at the Port of Tianjin, 173 people died as a result.

Examples of large-scale industrial accidents warn us of postponing the solving of these problems. As follows from accident statistics, the most frequent cause of accidents is a human error (up to 80%).

GENERAL PRINCIPLE OF MAJOR ACCIDENT RISK ASSESSMENT

Appropriate partial methods are recommended for individual risk management steps. An overview of the world-recognized techniques appropriate for each risk management step is given in the following

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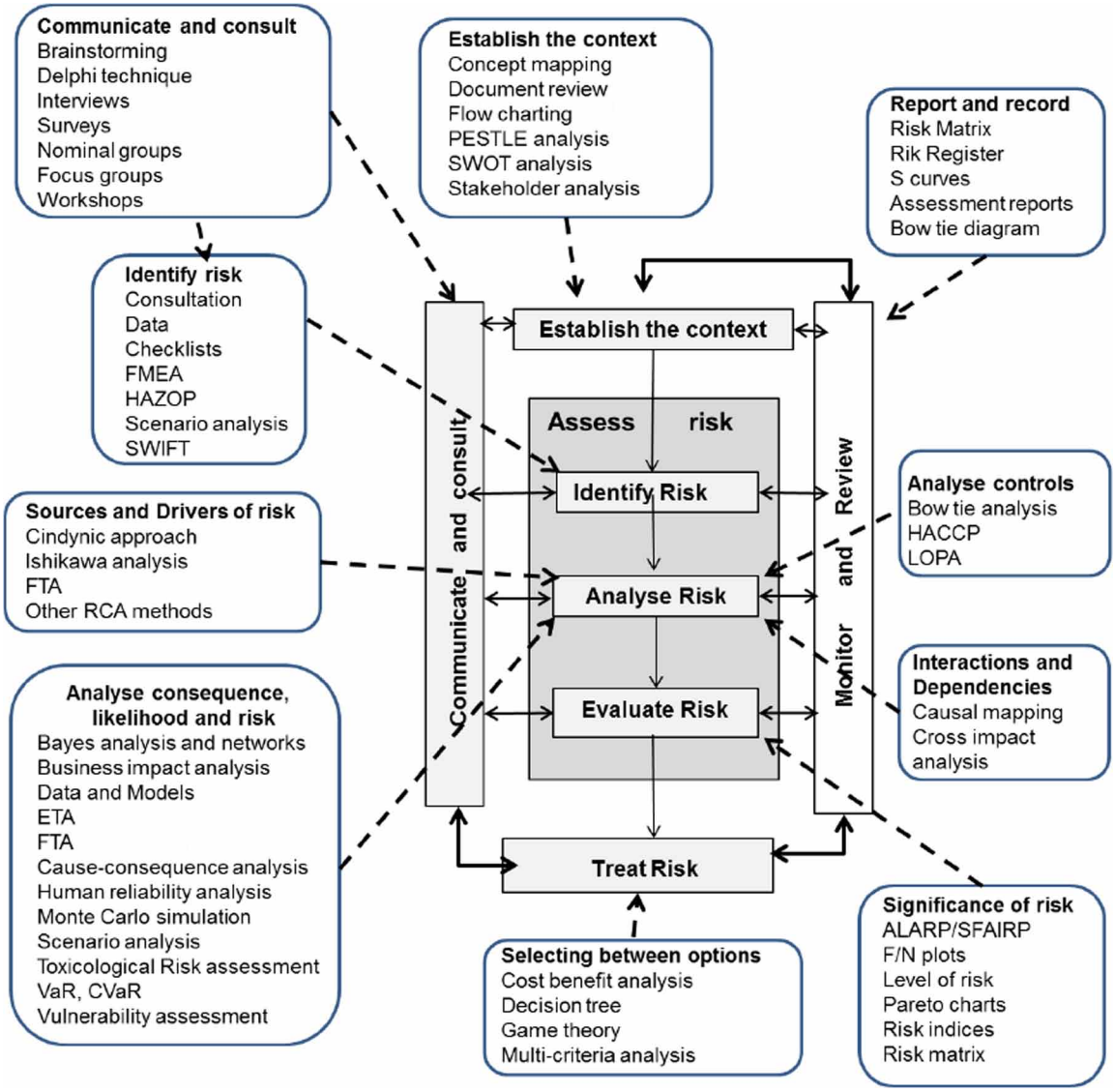
diagram (see Figure 3). The scheme is based on the risk management process diagram in ISO 31010, some techniques can be used in multiple risk management steps.

These methods of Figure 3 in ISO 31010 are characterized in detail, it is clearly reported their utility, time-consuming and demands the specialists input data and the application. Methods are divided into qualitative and quantitative.

Figure 3. Methods / techniques in risk management process (ISO, 2019)



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Generally, the following steps are to be taken in the major accident risk analysis and assessment:

Step 1: Identification of sources of risk (hazards) and formation of possible scenarios of events and their causes that may lead to major accidents.
Step 2: Estimation of probability of major accident scenarios.
Step 3: Estimation of effects of possible scenarios of major accidents on human health and lives, on the environment and property.
Step 4: Determination of risk level and assessment of acceptability of major accident risk.

The key question of risk analysis is the selection of a suitable method. That is why a brief overview of available methods is given below. A whole series of methods that are modified versions of several most widely used methods enables the making of risk analysis; the publication (Tixier, 2002) gathers 62 methods of risk analysis known best. In this place, it is necessary to emphasize that the majority of the methods are designated as partial methods because they merely assist in particular steps of the whole process of risk analysis, e.g. in hazard identification, assessment of consequences or probability assessment (see Table 1).

Table 1. Overview of most widely used partial methods of risk analysis

Method name	Abbreviation
1. Identification of risk sources	
Checklist Analysis	CL
What-If Analysis	WI
Hazard and Operability Analysis	HAZOP
Relative Ranking	RR (F&EI, CEI)
2. Probability estimation	
Fault Tree Analysis	FTA
Event Tree Analysis	ETA
3. Consequences estimation	
Selected programs for consequences modeling	2D models - ALOHA, EFFECTS, SAFETI, PHAST, etc.
	3D models (CFD) - FLUENT, FLACS, etc.

These most widely used methods have various applications depending upon the extent and complexity of the process, provide various kinds of results, and differ in demands concerning the working team and time. Some methods are interrelated or overlap each other, others are incomparable. The selection of the method is influenced by several factors, such as the goal and the type of study, experience of the working team, availability of required information and of course, economic costs of the study.

Methods of risk assessment can be divided into qualitative and quantitative ones. Another division of the methods can be done, namely into the following three categories:

- **deterministic** – based on the quantification of accident consequences;

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- **probabilistic** – based on the probability or frequency of accident;
- combination of deterministic and probabilistic approaches.

Generally, it can be stated that the deterministic methods are used for the analysis of the whole industrial establishment, whereas the probabilistic methods for the analysis of a chosen part of the establishment requiring a more detailed and thus more demanding analysis. A trend in risk assessment is the hierarchization of results, especially in easily applicable methods; results are presented as hazard level indexes (so-called indexing or screening methods). For the risk sources that have the worst indexes it is then recommended to make a detailed analysis by using high precision methods. A similar new approach to the risk assessment of whole industrial establishments consists in the selection of major risk sources in the first phase and in the second phase, the detailed quantitative risk assessment (QRA) of most hazardous installations selected like that. Both these approaches aim at limiting the number of installations assessed in detail that are there in the industrial establishment, to simplify the whole risk analysis and to concentrate attention especially to the most major risk sources. It must be said that one method for making the whole risk analysis does not exist yet; in practice it is necessary to combine several methods.

The quantitative risk assessment (QRA) of major accidents has been published in various handbooks; with the most significant of them the following publications can be ranked: (Lees, 2005), (CCPS, 1989), (CCPS, 2001), (TNO, 1997) and (TNO, 2005). For the detailed assessment of major accident risks to the population, the below presented methodologies are used oftenest.

What enables an integrated risk analysis is the methodology CPQRA - Chemical Process Quantitative Risk Analysis (CCPS, 1989). This methodology was developed for the needs of chemical industry on the basis of experience of nuclear, aircraft and electronics industries, but its recommended procedure for the analysis is also applicable to other kinds of industry. CPQRA is a tool for risk quantification and reduction by means of partial methods and procedures.

Another acknowledged approach to the comprehensive risk assessment is a Dutch methodology "CPR 18E Guidelines for Quantitative Risk Assessment" known as Purple Book (TNO, 2005). This methodology consists of two parts, namely risk assessment for stationary installations and risk assessment for the transport of dangerous substances. In the further parts of this text, chosen chapters dealing with the assessment of stationary sources of risk will be presented briefly.

The methodology ARAMIS (Accidental Risk Assessment Methodology for Industries in the framework of the SEVESO II Directive) was invented as part of a project of the EU Fifth Framework Program in the years 2002 – 2004. The project ARAMIS proposed a harmonized methodology for risk assessment. The goal of it is above all to reduce uncertainties and variability in results and to include the assessment of risk management efficiency into the analysis. It is thus necessary to take ARAMIS as a global tool for carrying out effective risk identification and analysis with a whole series of pre-prepared and recommended steps (ARAMIS, 2004).

Industry needs a method to identify, assess and reduce the risk and demonstrate the risk reduction as required by the Art.9 of the SEVESO directive. This method and the demonstration have to be accepted by the competent authorities. The approach also has to bring useful information about the ways to reduce the risk and to manage it daily (ARAMIS, 2004).

ARAMIS is divided into the following major steps:

- Identification of major accident hazards (MIMAH).
- Identification of the safety barriers and assessment of their performances.

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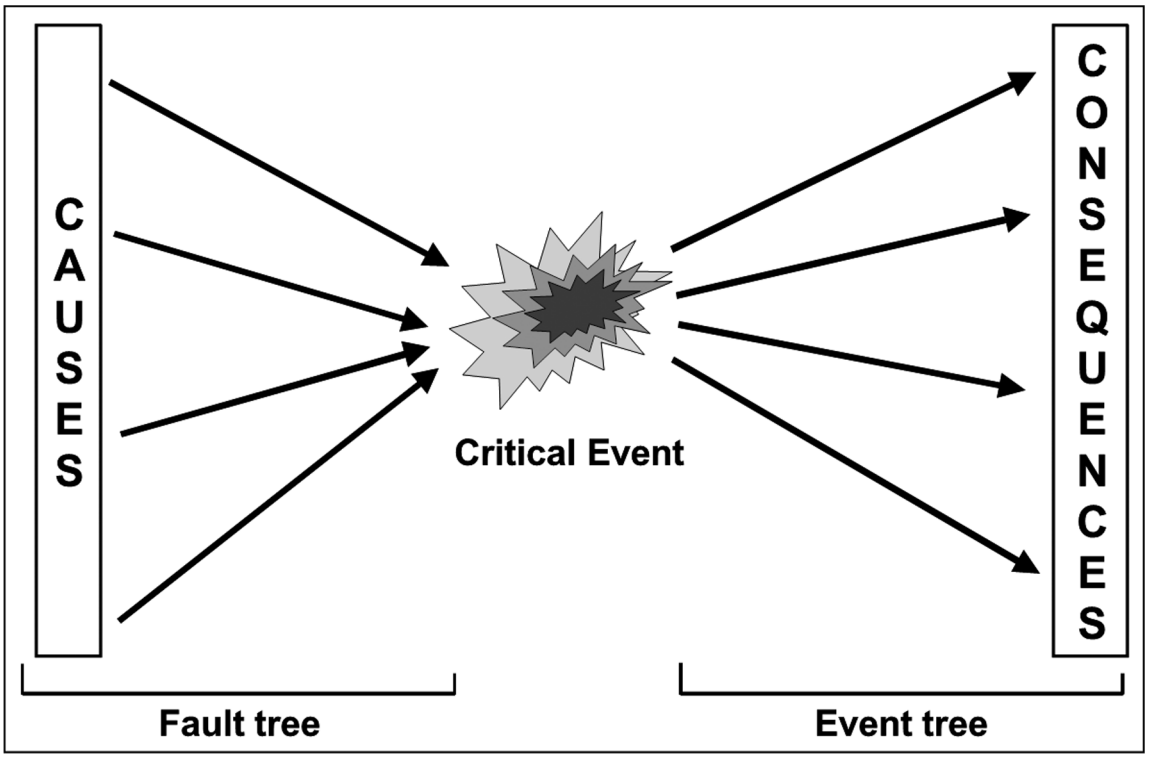
- Evaluation of safety management efficiency to barrier reliability.
- Identification of Reference Accident Scenarios (MIRAS).
- Assessment and mapping of the risk severity of reference scenarios.
- Evaluation and mapping of the vulnerability of the plant's surroundings.

The main idea of the ARAMIS methodology is based on the so-called bow-tie diagrams, the connection of the fault tree and the event tree (see Figure 4).

Figure 4: General scheme of the bowtie (ARAMIS, 2004)



Step 1: Identify of Risk Sources and Scenario Creating

To identify hazards, it is appropriate to divide the hazard into several groups and subgroups, e.g.:

1. Mechanical hazards.
    a. Unprotected moving parts of machines.
    b. Dangerous surfaces (sharp edges, corners, protruding parts, etc.).
    c. Equipment under pressure.
    d. Equipment with necessary handling.
    e. Moving transport equipment.
    f. Falling, slipping, tripping.

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   g. Falls from a height.
2. Electrical hazards.
   a. Electric shock.
   b. Electric arc.
   c. Electrostatic charge.
3. Chemical hazards.
   a. Chemical reactions.
   b. Use of flammable and explosive materials.
   c. Use of toxic substances.
   d. Irritants.
   e. Lack of oxygen.
4. Biological hazards.
   a. Infections caused by microorganisms.
   b. The presence of allergens.
5. Fire and explosion.
   a. Open fires.
   b. Hot surfaces.
   c. Sparks.
   d. Autoignition.
   e. Explosions of solids and liquids.
   f. Explosion of gases, vapors and dusts (explosive mixtures with air).
6. Other physical factors.
   a. Electromagnetic radiation (thermal, x-ray, ionizing radiation).
   b. Lasers.
   c. Noise and ultrasound.
   d. Vibration.
   e. Cold substances and environment.
   f. Media under pressure.
7. Factors of work environment and work organization.
   a. Inappropriate lighting.
   b. Inappropriate temperature, humidity, ventilation.
   c. Factors of work process (night work, physical exertion, rest, etc.).
   d. Monotonous work.
   e. Human factor errors.
   f. Insufficient work organization.
   g. Neglected maintenance, especially on safety equipment.
8. Other factors.
   a. Dangerous acts of other persons (terrorism, sabotage, crime).
   b. Working with animals.
   c. Unfavorable weather conditions.
   d. Natural disasters.
   e. Surrounding transport and neighboring industrial enterprises.

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The list of hazards may not be complete, may be divided into other groups according to other criteria, but for the purposes of risk analysis it constitutes a useful default list for identifying sources of risk.

The most commonly used methods for hazard identification at the beginning of the risk analysis are briefly described below.

Selection Method

The selection method according to CPR 18E Purple Book (TNO, 2005) was developed for revealing such installations that contribute to a risk most. The installations selected in this way must be considered in the detailed quantitative risk analysis (QRA). Individual steps of the selection method are as follows:

1. An establishment is divided into independent installations (separated units).
2. A hazard related to each installation is determined on the basis of quantity of a substance, operational conditions and properties of dangerous substances. The indication number A expresses the level of real hazardousness of the installation.
3. A hazard related to the installation is determined for a set of points in the surroundings (on the boundary) of the establishment. The hazard related to the installation within a certain distance is determined on the basis of a known indication number and distance between the point being assessed and the installation. The level of hazard in the point being assessed is deduced from the value of selection number S.
4. For the analysis QRA, installations are selected on the basis of relative value of selection number S.

Dow's Fire and Explosion Index

The method "Fire and Explosion Index" (F&E Index) has been improved already for more than 30 years to get into the form of a complex index that is predicable to the relative level of risk of losses of the unit or installation being assessed from the point of view of a possible fire and explosion. In a broad conception, it represents a method for the relative classification of hazard of key units and installations. The stated index is used both by the Dow company and other users. It occupies the leading position among indexing methods in the chemical industry. The current version of F&E Index furnishes key data enabling the assessment of overall fire and explosion risk.

The goal of study using the method F&E Index is as follows (FEI, 1994):

1. To quantify expected damage as a consequence of a fire and explosion (not maximum loss, but maximum probable loss);
2. to identify the installations that could contribute to the occurrence and escalation of an accident;
3. To present obtained results of F&E Index to the management.

Each installation with the F&E Index higher than 128 requires another risk analysis. Table 2 is a listing of the F&EI values versus a description of the degree of hazard that gives some relative idea of the severity of the F&EI (FEI, 1994).

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Table 2. F&E Index degree of hazard (FEI, 1994)

DEGREE OF HAZARD FOR F&EI	
F&E INDEX RANGE	**DEGREE OF HAZARD**
1 - 60	Light
61 - 96	Moderate
97 - 127	Intermediate
128 - 158	Heavy
159 - up	Severe

Dow's Chemical Exposure Index

The chemical exposure index (CEI) is a relatively simple method for the assessment of potential exposure of people in the vicinity of chemical plants, where a realistic possibility of release of dangerous chemical substance exists. It is very difficult to determine an absolute level of risk, the method CEI enables the relative comparison of various risk sources (CEI, 1994).

CEI can be used for installations intended for the storage and/or treatment of toxic substances both for new projects and existing installations. If the value of CEI is greater than 200, the unit requires another assessment of hazardousness.

In the text below, the methods HAZOP, FTA and ETA will be introduced because they oftenest follow the screening and indexing methods to specify possible causes of accidents or probabilities of accident occurrence.

Hazard and Operability Analysis (HAZOP)

This method was developed to identify and assess process hazards and to identify operational problems. It is used most frequently in the course and/or after the design stage of process; it is also used advantageously in existing processes. An interdisciplinary team (5 - 7 members) utilizes creative, systematic steps to reveal deviations from the project that may lead to undesirable consequences. For revealing, fix determined words are used (so-called key words – less, more, no, also, part, other, reverse, early, late) that are combined with process parameters. For instance, the key word "No" in conjunction with the parameter "Flow" gives a deviation "No flow". Results of team discussion are written into a table where individual columns represent causes, consequences and protective measures for process deviations. What is a disadvantage of this method is high time consumption as well as labour intensity (AIChE, 1992).

Creating of Scenarios

In case of accidents caused by dangerous substances, a lot of accident manifestations can occur. Basic forms of accident scenarios are summarized in the following diagram (see Figure 5) according to the methodical instruction of the Czech Ministry of Environment (MZP, 2017).

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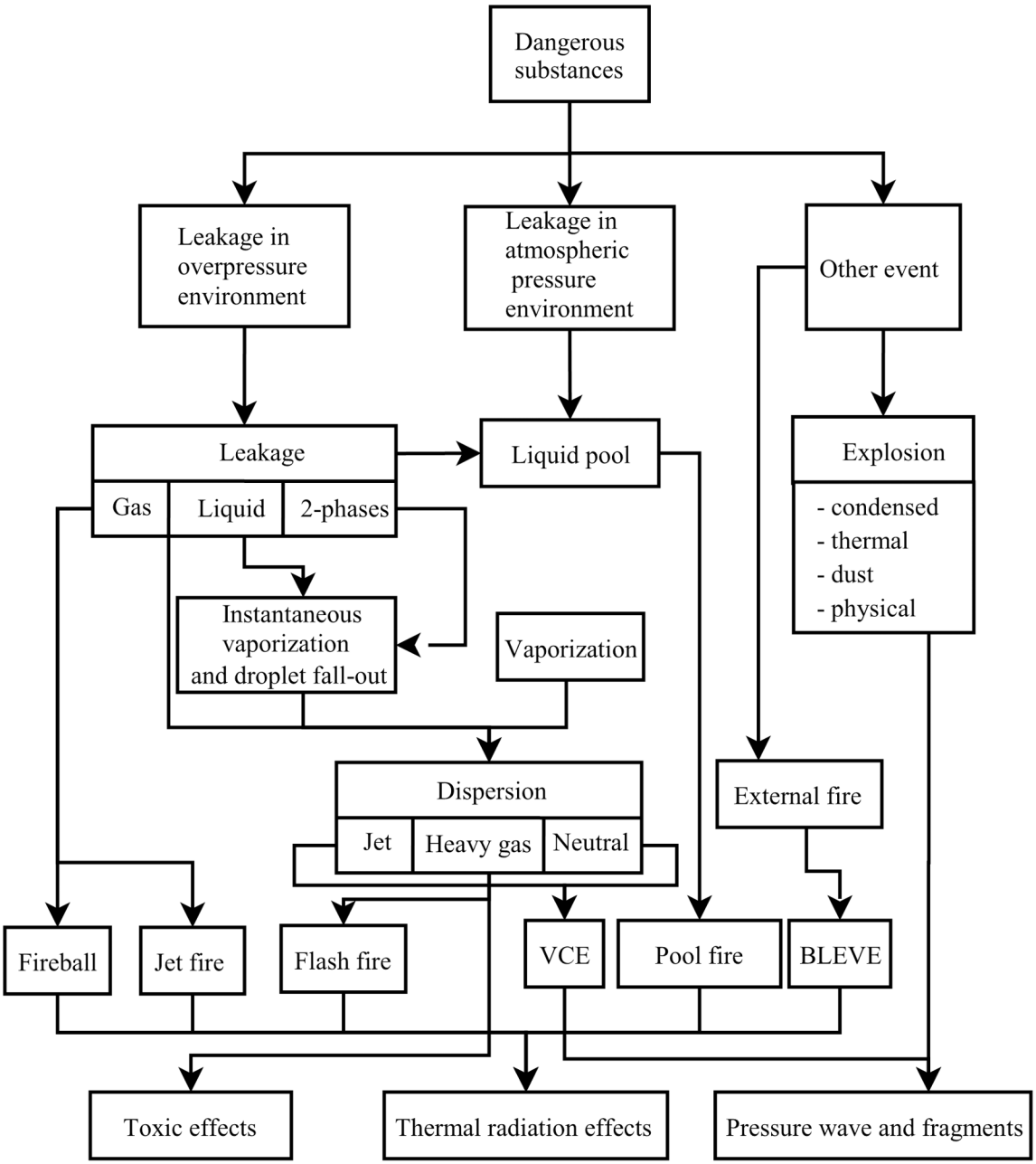
Figure 5. Diagram of physical effects and possible accident expansion (MZP, 2007)



Three main categories of accident effects exist: toxic gases effects, thermal radiation effects, and pressure wave effects with possible flying debris. These effects can impact human lives, property damage, and environmental damage. From the synergetic effects (so called. domino effects) point of view, especially the effects of fires, explosions and flying debris are significant.

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Step 2: Assessment of Scenario Probability

Failure and event trees are most commonly used to assess probability.

Fault Tree Analysis (FTA)

It is a deductive method that looks for individual accidents and system failures and determines causes of these events. FTA is a graphical model of various combinations of failures in installations and human errors that may result in a main system failure called "top event". It is also suitable for extensive systems, is able to determine a complete list of minimum failures. The model is based on Boolean algebra (gates "and", "or", and others) in looking for a minimum failure leading to a top event; outcomes are types of failures and quantitatively assigned probabilities of system failures, if we know probabilities of primary causes. The study can be carried out by one or more analysts who can recommend safety improvements in the process. The method is not suitable for early phases of design and is time-consuming; demands increase depending upon the complexity of the system (AIChE, 1992).

Event Tree Analysis (ETA)

The method graphically expresses possible consequences of an accident following from an initiation event. Outcomes are sequences of accidents, a series of failures and faults leading to an accident (system function success or failure is assessed). Sequences of accidents represent logical combinations of events, can be transferred to a fault tree model and further quantitatively assessed. The method is suitable for the analysis of comprehensive process that has several kinds of safety systems. The analysis can be made by one analyst, but 2 - 4 analysts are often preferred. Analysts can utilize outcomes for recommendations for reducing the probability and/or mitigating consequences of potential failures (AIChE, 1992).

Scenario Probability Assessment

To determine the probability of individual scenarios for major accidents, generic values stated in the special literature based on historical data are often used. One of the most frequently utilized publications is the Purple Book (TNO, 2005), where events in the course of which installation damage and a release of dangerous substance, so-called Loss of Containment (LOC), occur, are described. For these cases of failures, assumed frequencies of occurrence determined on the basis of accidents in the past are stated. The methodology thus presents the failures in installation that contribute to a societal risk and must be taken into account during quantitative risk assessment.

As examples of data on failure frequencies, values for atmospheric tanks are there in the following Table 3.

A single leak with immediate ignition may cause a BLEVE event and a fire ball. Example BLEVE type explosion effects (the probability of death of persons depending on the distance from the source) is shown below (Fig. 6) for storing 100 tons of propane.

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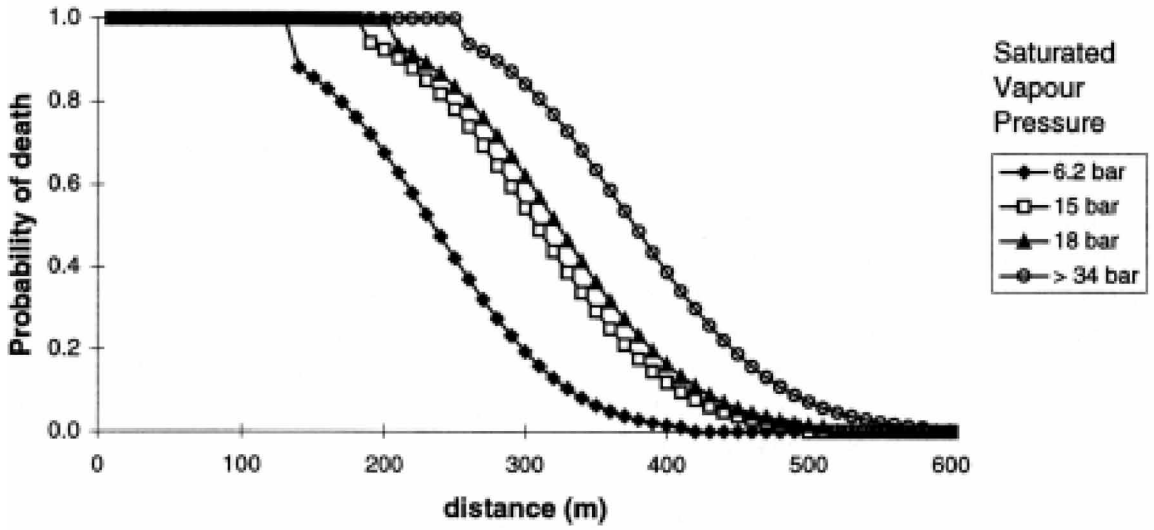
Table 3. The failure frequencies for atmospheric tanks (TNO, 2005)

LOCs for atmospheric tanks						
G.1 Instantaneous release of the complete inventory a: directly to the atmosphere b: from the primary container into the unimpaired secondary container or outer shell G.2 Continuous release of the complete inventory in 10 min at a constant rate of release a: directly to the atmosphere b: from the primary container into the unimpaired secondary container or outer shell G.3 Continuous release from a hole with an effective diameter of 10 mm a: directly to the atmosphere b: from the primary container into the unimpaired secondary container or outer shell						
Installation (part)	**G.1a Instantan. release to atmosphere**	**G.1b Instantan. release to secondary container**	**G.2a Continuous 10 min release to atmosphere**	**G.2b Continuous 10 min release to secondary container**	**G.3a Continuous Ø10 mm release to atmosphere**	**G.3b Continuous Ø10 mm release to secondary container**
Single containment tank	5×10^{-6} y^{-1}		5×10^{-6} y^{-1}		1×10^{-4} y^{-1}	
tank with a protective outer shell	5×10^{-7} y^{-1}	5×10^{-7} y^{-1}	5×10^{-7} y^{-1}	5×10^{-7} y^{-1}		1×10^{-4} y^{-1}
Double containment tank	1.25×10^{-8} y^{-1}	5×10^{-8} y^{-1}	1.25×10^{-8} y^{-1}	5×10^{-8} y^{-1}		1×10^{-4} y^{-1}
Full containment tank	1×10^{-8} y^{-1}					
In-ground tank		1×10^{-8} y^{-1}				
mounded tank	1×10^{-8} y^{-1}					

Figure 6. The probability of death as a function of the distance for a BLEVE of a storage tank containing 100 tons of propane (TNO, 2005)



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Step 3: Assessment of Scenarios Consequences

1. Thermal radiation
   a. Continuous radiation
   b. Instantaneous radiation
2. Blast effects
3. Missiles
4. Toxic effects

All the effects represented in Table 4 make reference only to humans or structures but not to the environment.

Table 4. Definition of the thresholds for the diverse levels of effects (ARAMIS, 2004)

Level of effects	Radiation (1) (kW/m^2)	Instantaneous Radiation	Blast (mbar)	Missiles (2) (%)	Toxic effect (3)	Description
1	< 1,8	< 0.5 LFL	< 30	0	< TEEL-1	Small or non effects
2	1,8 - 3		30 - 50		TEEL-1 - TEEL-2	Reversible effects
3	3 - 5		50 - 140		TEEL-2 - TEEL-3	Irreversible effects
4	> 5	= 0.5 LFL	> 140	100	> TEEL-3	Start of lethality and/or domino effects

(1) For 60 s exposure
(2) Range distance of the indicated percentage of missiles
(3) TEEL values (Temporary Emergency Exposure Limits)

For the detailed modeling of releases of dangerous substances and consequences of fires, explosions and spreading toxic clouds, a whole series of computer programs can be used (Bernatik, 2008). To the best known programs ALOHA, RMP Comp, SAFETI, PHAST, EFFECTS, CHARM, and others belong. Some programs are freely available on the Internet (e.g. ALOHA, RMP Comp), others are commercial products of significant companies concerned with risk analyses (e.g. company TNO / Gexcon– EFFECTS or company DNV – PHAST, SAFETI). In the further text, the program EFFECTS is described as an example.

The EFFECTS model represents a high standard of modeling the consequences of major accidents. The program combines two accepted models for the calculation of physical effects after a release of dangerous substances EFFECTS and DAMAGE. The model EFFECTS make it possible to determine manifestations of accidents, such as pressure wave, heat radiation, gas concentration, the model DAMAGE makes it possible to determine consequences of accidents, e.g. human death rate, first-degree and second-degree burns, lung injury, eardrum damage, and others. The advantage of connection of these two models in one program is the inclusion of comprehensive calculations covering the range from initiation physical effects to accident consequences. Results are presented in text and graphical forms (EFFECTS, 2018). An example of monitor of the program EFFECTS is shown in the figure below (see Figure 7).

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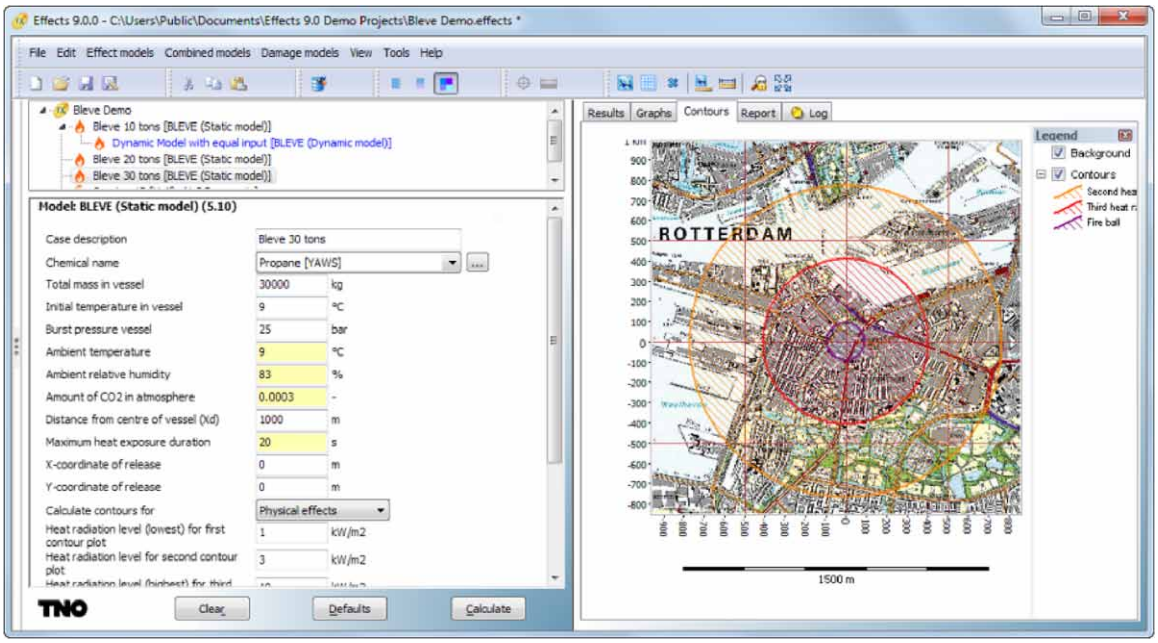
Figure 7. Example of monitor of software EFFECTS (Effects, 2018)



Step 4: Risk Evaluation - Risk Acceptability

The calculation of individual and societal risks includes the calculation of probability of human death for given exposure. The probability of death is calculated by using the probit function (kind of dose–response model dependence expressed by an equation). The relation between the probability of an effect and the exposure usually results in a sigmoid curve. The sigmoid curve is replaced with a straight line if the probit is used instead of the probability (see Figure 8 and Table 5).

Table 5. The probit, Pr, as a function of the probability, P (TNO, 2005)

P	0	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0	-	2.67	2.95	3.12	3.25	3.36	3.45	3.52	3.59	3.66
0.1	3.72	3.77	3.82	3.87	3.92	3.96	4.01	4.05	4.08	4.12
0.2	4.16	4.19	4.23	4.26	4.29	4.33	4.36	4.39	4.42	4.45
0.3	4.48	4.50	4.53	4.56	4.59	4.61	4.64	4.67	4.69	4.72
0.4	4.75	4.77	4.80	4.82	4.85	4.87	4.90	4.92	4.95	4.97
0.5	5.00	5.03	5.05	5.08	5.10	5.13	5.15	5.18	5.20	5.23
0.6	5.25	5.28	5.31	5.33	5.36	5.39	5.41	5.44	5.47	5.50
0.7	5.52	5.55	5.58	5.61	5.64	5.67	5.71	5.74	5.77	5.81
0.8	5.84	5.88	5.92	5.95	5.99	6.04	6.08	6.13	6.18	6.23
0.9	6.28	6.34	6.41	6.48	6.55	6.64	6.75	6.88	7.05	7.33

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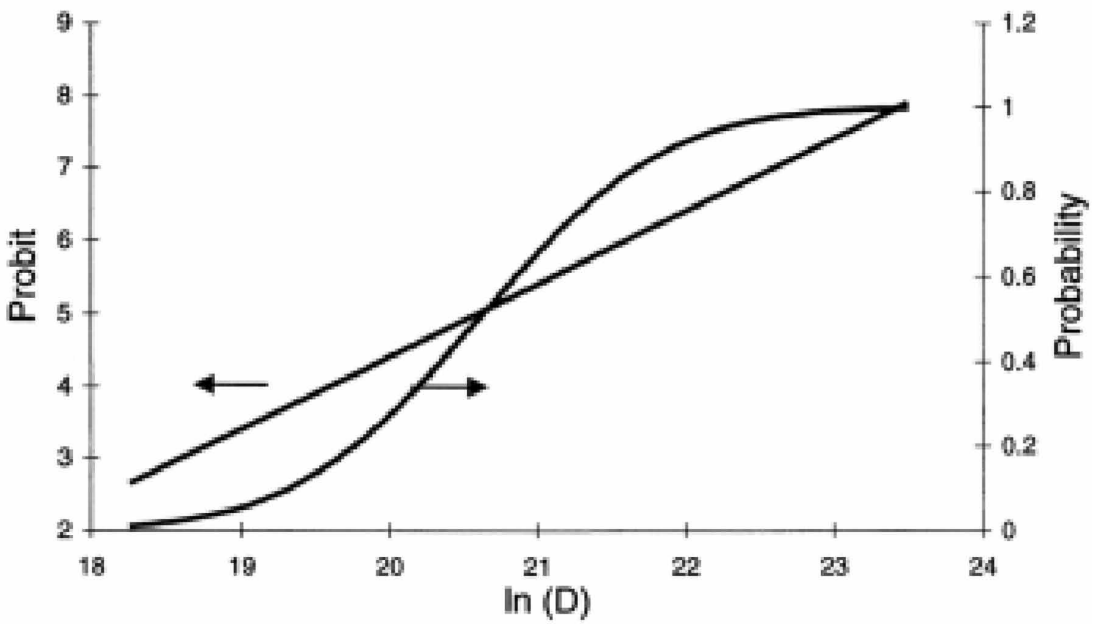
Figure 8. The probability and the probit as a function of exposure to ammonia (TNO, 2005)



As example, the probability of death due to exposure to a toxic cloud, P_E, and the fraction of people indoors and outdoors dying, $F_{E,in}$ and $F_{E,out}$, is given in Figure 9.

The probability of death, P_E, is calculated with the use of a probit function and relation 1. The probit function for death due to toxic exposure is given by (TNO, 2005):

$$Pr = a + b \times \ln (C^n \times t) \quad (1)$$

where:

Pr probit function corresponding to the probability of death (-)
a, b, n constants describing the toxicity of a substance (-)
C concentration ($mg.m^{-3}$)
t exposure time (minutes)

Notes:

- The value of the constant, a, depends on the dimensions of the concentration, C, and the exposure time, t. The dimensions of the concentration and exposure time must correspond to the value of the constant, a, in the probit function.
- The probit is a function of the toxic dose to an individual. The toxic dose, D, is equal to $D = C^n \times t$ if the concentration, C, is constant during the time of exposure, t. If the concentration is not constant in time, the toxic dose is calculated as $D = \int C^n \, dt$; the probit, Pr, should be calculated correspondingly.
- The exposure time, t, is limited to a maximum of 30 minutes, starting from the arrival of the cloud. The arrival of the cloud can be defined as the moment when the probability of death, PE, exceeds 1%.

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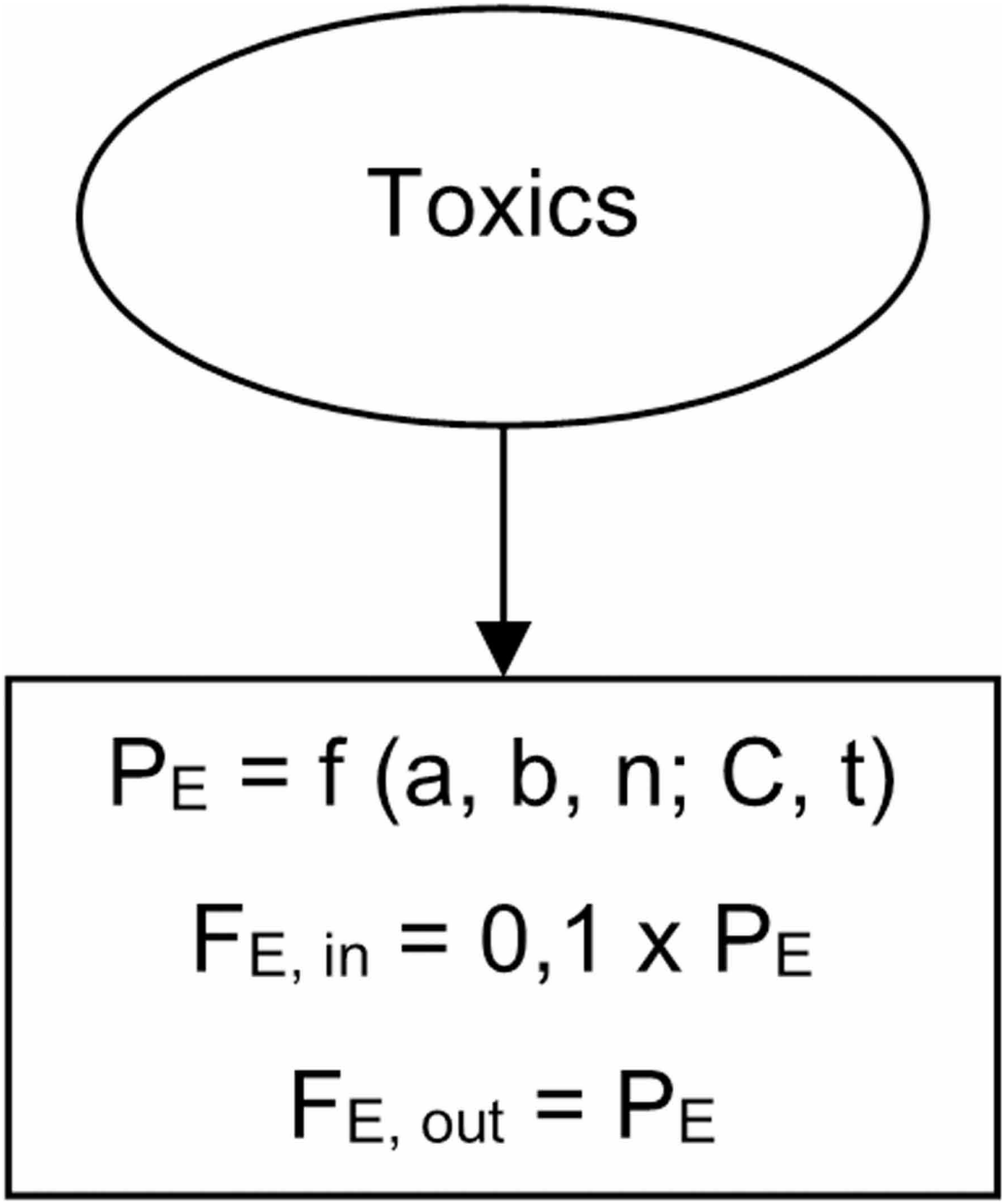
- Staying indoors reduces the toxic dose since the concentration indoors is lower than the concentration outdoors during cloud passage. This effect is accounted for by a generic factor 0.1 in the fraction of people dying indoors. (TNO, 2005)

Figure 9. Calculation of the probability of death, P_E, and the respective fractions of the population dying indoors and outdoors, $F_{E,in}$ and $F_{E,out}$, due to exposure to a toxic cloud. The function f (a,b,n;C,t) is the probit function for exposure to toxic substances (TNO, 2005)



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Similarly, the probit approach is recommended for evaluation of consequence to fire and explosion. For example, the probability of death from heat radiation exposure is calculated by means of the probit function that is given by a relation presented bellow (TNO, 2005):

$$Pr = -36.38 + 2.56 \times \ln (Q^{4/3} \times t) \quad (2)$$

where:

Pr probit function corresponding to the probability of death (-)

Q heat radiation ($W.m^{-2}$)

t exposure time (s)

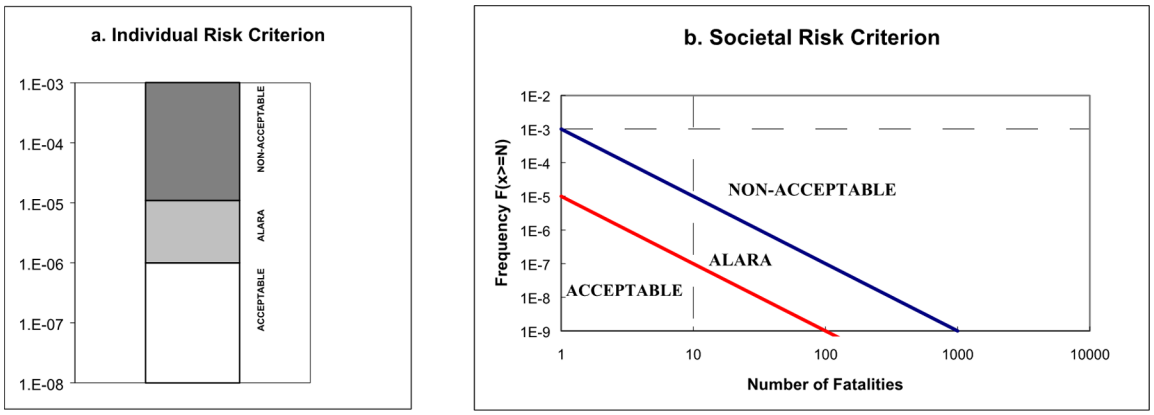
Calculation and Result Presentation

From the comprehensive point of view, a risk is understood to be a relation between the expected loss (health damage, loss of life, loss of property, and others) and the uncertainty of loss considered (usually expressed by the probability or frequency of occurrence of an unexpected event). The results of quantitative risk analysis (QRA) are the individual risk and the societal risk.

- The individual risk represents the frequency of death of an individual in connection with a case of installation failure (LOC). One can assume that the individual is not protected and is exposed to unfavorable conditions for the whole time of exposure. The individual risk is represented by contours in a topographic map.
- The societal risk represents the frequency of such events in the course of which more persons lose their lives together. The societal risk is represented by means of F-N curves, where N stands for the number of deaths and F is the cumulative frequency of events accompanied by N or more deaths.

Criteria for the determination of individual and societal risks are illustrated in Figure 10.

Figure 10. Theoretical examples of criteria for (a) individual and (b) societal risk (Christou, 2006) Note: ALARA - As Low as Reasonably Achievable



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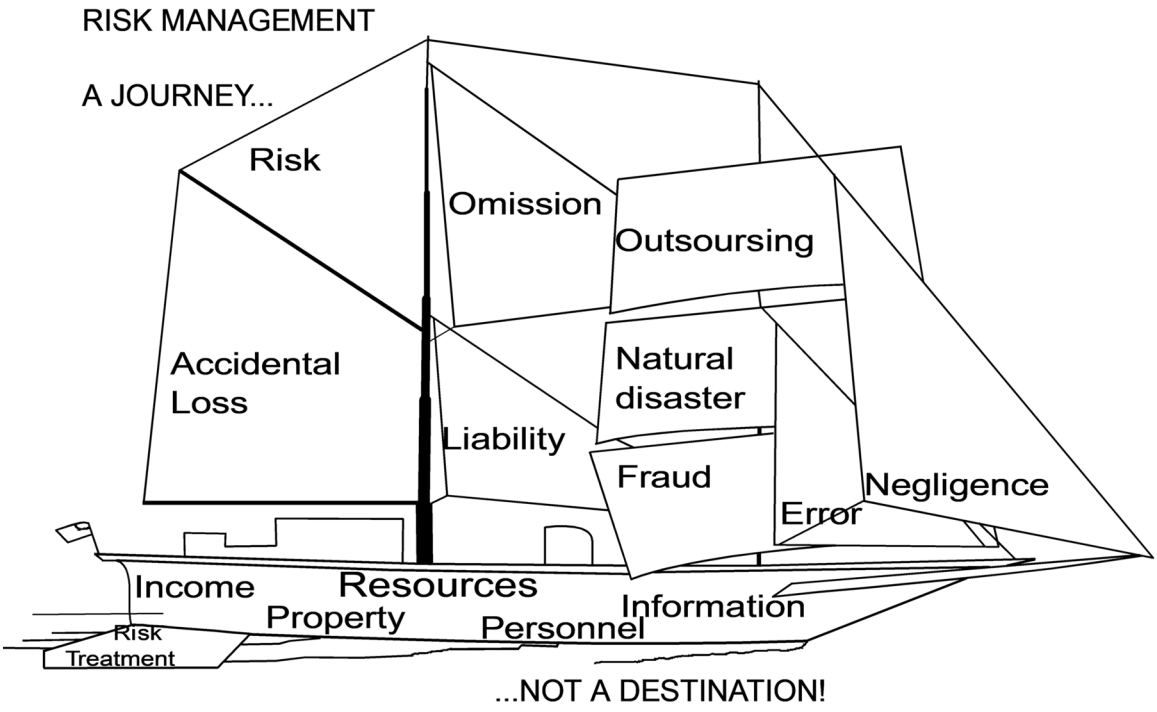
MAJOR ACCIDENT RISK MANAGEMENT

Risk management is the process of identifying, analyzing and responding to risk factors throughout the life of a project and in the best interests of its objectives. Proper risk management implies control of possible future events and is proactive rather than reactive (Stanleigh, 2016). The whole process of risk management is an endless journey ... (see Figure 11).

Figure 11. Risk management (Knight, 2010)



Risk management involves understanding, analyzing and addressing risk to make sure organizations achieve their objectives (IRM, 2016). Figure 12 presents the cycle of risk management processes as well as the basic idea of generally all methods.

The process safety management system program is divided into 14 elements. The U.S. Occupational Safety and Health Administration 1910.119 define all 14 elements of the process safety management system plan (OSHA, 2013).

- Process Safety Information
- Process Hazard Analysis
- Operating Procedures
- Training
- Contractors
- Mechanical Integrity
- Hot Work

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- Management of Change
- Incident Investigation
- Compliance Audits
- Trade Secrets
- Employee Participation
- Pre-startup Safety Review
- Emergency Planning and Response

Figure 12. Planning for risk management (Rahim, 2016)

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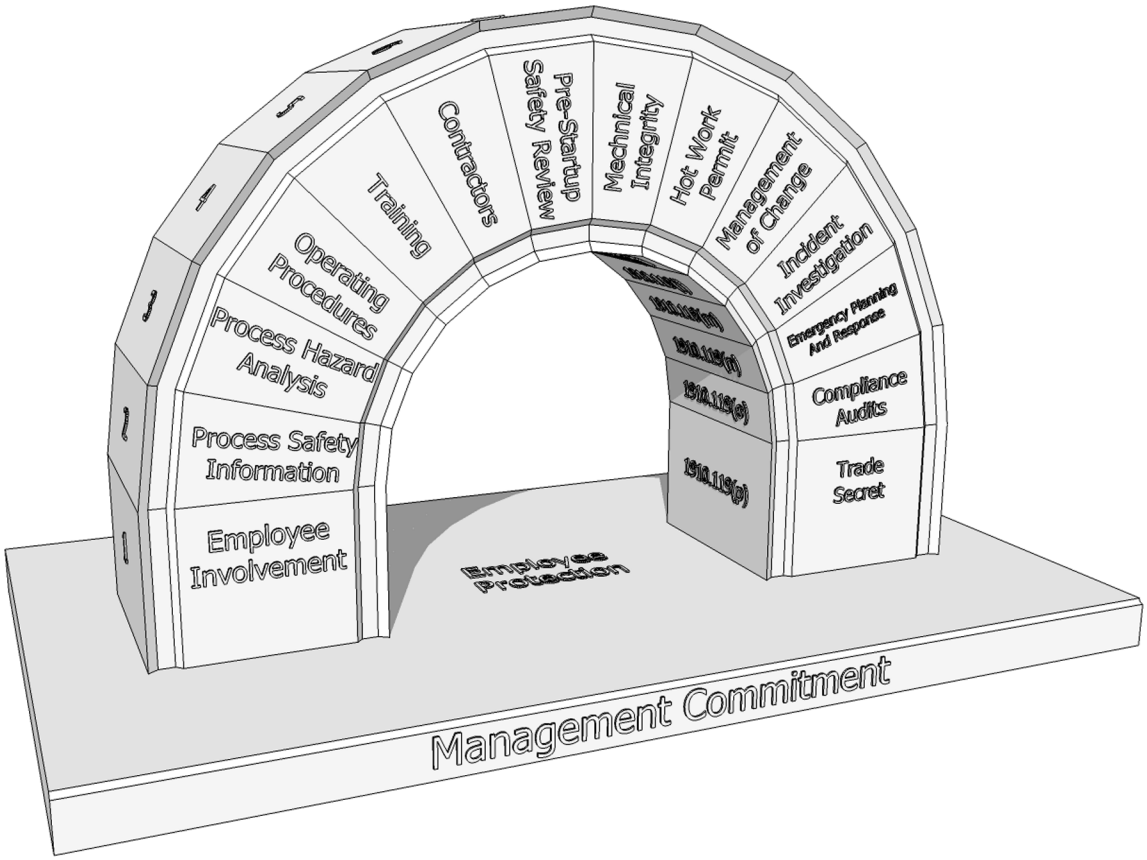
All of those elements mentioned above are interlinked and interdependent (see Figure 13). There is a tremendous interdependency of the various elements of process safety management (PSM). All elements are related and are necessary to make up the entire PSM picture. Every element either contributes information to other elements for the completion or utilizes information from other elements in order to be completed.

Figure 13. 14 Elements of Process Safety Management (Khamar, 2016)



The problematics of risk management is extensive, complex, with large number of individual elements and connections between them. Therefore, there is no way how to formulate a general method for all applications.

The need to assess and manage major accident risks follows from several factors, especially from a large number of accidents occurred in the past, leading to pressures to reduce risks associated with various process installations. Furthermore, this need is initiated by the necessity of prevention against accidents in land-use planning, i.e. approving the location of new establishments in relation to inhabited and protected areas, by the necessity of improving emergency preparedness, and others. Carrying out a risk assessment and following measures to reduce the risk can contribute to the prevention of accidents, the mitigation of accident consequences on human lives, property and the environment, and also can

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prevent the unsuitable location of a new establishment in the vicinity of population centers and areas protected from the environmental point of view. Risk assessment should be done in the preparatory phase of building of a new establishment and during a major accident investigation to prevent accident re-occurrence, and in the phase of establishment operation when the risk assessment contributes to better awareness on risk sources, accident consequences and threatened target groups. Prepared accident scenarios are used for improvements in emergency plans and preparedness for effective interventions in case of accident.

SOLUTIONS AND RECOMMENDATION

On the basis of results of risk assessment, priorities in reducing the risks can be decided in the phase of risk management. This area of risk management is necessary for the sustainable development of a mature society. Basic approaches to the reducing of risks associated with process installations are as follows:

- The replacement of a dangerous substance by a substance less dangerous,
- A change in technology to become more advanced, with the presence of a smaller quantity of dangerous substances,
- Decreasing the stock of dangerous substances to a necessary minimum,
- The effective separation of the quantity of dangerous substances in the establishment (e.g. by remote-controlled valves) – decreasing the quantity of a releasing substance.

Safety approach based on inherent safety has developed since 1991 by Trevor Kletz. The four main methods for achieving inherently safer design are: (Khan, 2003)

- **Minimize**: Reducing the amount of hazardous material present at any one time, e.g. by using smaller batches.
- **Substitute**: Replacing one material with another of less hazard, e.g. cleaning with water and detergent rather than a flammable solvent.
- **Moderate**: Reducing the strength of an effect, e.g. having a cold liquid instead of a gas at high pressure or using material in a dilute rather than concentrated form.
- **Simplify**: Eliminating problems by design rather than adding additional equipment or features to deal with them. Only fitting options and using complex procedures if they are really necessary.

Two further principles are used by some: (Khan, 2003)

- **Error tolerance**: Equipment and processes can be designed to be capable of withstanding possible faults or deviations from design. A very simple example is making piping and joints capable of withstanding the maximum possible pressure, if outlets are closed.
- **Limit effects** by design, location or transportation of equipment so that the worst possible condition produces less danger, e.g. gravity will take a leak to a safe place, the use of bunds.

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In terms of making plants more user-friendly Kletz added the following: (Kletz, 1991)

- Avoiding knock-on effects;
- Making incorrect assembly impossible;
- Making status clear;
- Ease of control;
- Software and management procedures.

Further, the recommended precautions and measures for risk reduction are given, where the field of risk management follows up with risk assessment. Basic division of safety precautions for risk reduction:

- **Technical Measures**: Such measures in equipment construction that lead to the increase of plant safety (examples: safety valves, sprinklers, automatic regulation, safety reservoirs, double-skin storage tanks…)
- **Organizational Measures**: Measures in work organization, regulations, technological procedures (including pertinent technical equipment) leading to the increase of plant safety.

Synergetic effects and domino effects can be also prevented using barriers limiting the possibility of initiation of consequent accidents and emergencies initiated by "covered" risks. Such barriers can be:

1. **Passive Barriers**: Functioning permanently without human intervention, energy sources, and without sources of information. Passive barriers can be physical (safety reservoirs, walls…), permanent barriers (corrosion prevention system) or internally safe design of equipment/facility.
2. **Active Barriers**: Must be activated to function. Active barriers always require the sequence: detection - diagnostics - action.
3. **Requiring Human Intervention**: Broadly interpreted, includes monitoring of all senses, communication, thinking, physical activities, emergency activities, etc. Human intervention can be part of the sequence: detection - diagnostics - action.

Automatic systems that eliminate a human factor are more suitable (e.g. detection and alarm systems, automatic systems like blocking and stop systems, fire and explosion protection systems, protections against releases of dangerous toxic substances, further safeguards against intrusion and unauthorized manipulation, central stations including the indication of protection system functionality). The majority of these technical safety measures are called preventive (precautions) because they contribute to a reduction in major accident occurrence.

Another group of safety measures consists of protective means and emergency response means that mitigate and limit the consequences of a major accident. Generally, e.g. fixed technical means (fixed extinguishing systems, ventilation systems), mobile technical means (pumps, fans, telescopic platforms, scum boards), transport means and special mechanisms (earth moving machines, truck tanker fuels, fire extinguishing tankers), emergency response and emergency materials, personal protective equipment, staffing (strength of staff ready to respond) can be stated. Into the safety measures, employee alarm and warning systems and methods and systems and methods of notification of entities concerned in case of emergency must be included.

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Complete summary of safety measures from the point of view of effects risks minimization is given in the following list of barriers ranked into individual groups:

Safe process management

- Spare energy sources
- Cooling
- Emergency standstill
- Computer driven process
- Operational instructions /procedures
- Summary of reactive compounds
- Performs risk assessment
- Assembly of safety valve
- Safety valve against under pressure (vacuum)
- Regular maintenance and cleaning of equipment
- Protective work aids (for employees)

Separability of materials

- Remotely controlled armatures
- Reflux valves for the prevention of reverse flow
- Safety valves in pipelines
- Discharges / purge
- Drainage
- Blocking / Interlock
- Safe distances between equipment

Elements of explosion protection

- Control of potential explosion
- Explosion-proof instruments
- Flame fuses
- Usage of inert gas

Elements of fire protection

- Detection of gas leakage
- Construction steel / fire resistant finishing
- Fire water supply
- Special systems (CO_2, halons, smoke detectors, etc.)
- Water drench systems / sprinklers
- Automatic water curtains
- Foam spray
- Handheld fire extinguishers / fire annunciators
- Cable protection

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Measures against dangerous liquids leakage

- Measurement of surface level in storage tank / equipment
- Double-skin storage tanks
- Place storage tanks with liquids into safety reservoirs or tanks
- Fitting the safety reservoirs by pump connected to plant sewage
- Sewage water control before leaving the plant

Measures against gaseous substances leakage

- Toxic gas detectors
- Devices detecting the oxygen concentration
- Fitting water drench systems to equipment (hand operated or automatic sprinklers)

Measures against external influences

- Flood and inundation protection
- Protection against natural external effects
- Monitoring cameras
- Registration of entry to the area
- Sensitive equipment must be locked and protected against unauthorized intrusion

Emergency planning

- Internal emergency plan for the evacuation and protection of employees
- Outer emergency plan for the protection of neighboring population

Below is a summary of the "Golden Rules" for the prevention of major accidents, as stated in the OECD publication (OECD, 2003).

ROLE OF ALL STAKEHOLDERS

- Make chemical risk reduction and accident prevention, as well as effective emergency preparedness and response, priorities in order to protect health, the environment and property.

While the risks of accidents are in the communities where hazardous installations are located, requiring efforts by stakeholders at the local level, there are also responsibilities for stakeholders at regional, national and international levels.

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- Communicate and co-operate with other stakeholders on all aspects of accident prevention, preparedness and response.

Communication and co-operation should be based on a policy of openness, as well as the shared objective of reducing the likelihood of accidents and mitigating the adverse affects of any accidents that occur. One important aspect is that the potentially affected public should receive information needed to support prevention and preparedness objectives, and should have the opportunity to participate in decision-making related to hazardous installations, as appropriate.

ROLE OF INDUSTRY (INCLUDING MANAGEMENT AND LABOR)

Management

- Know the hazards and risks at installations where there are hazardous substances.

All enterprises that produce, use, store, or otherwise handle hazardous substances should undertake, in co-operation with other stakeholders, the hazard identification and risk assessment(s) needed for a complete understanding of the risks to employees, the public, the environment and property in the event of an accident. Hazard identification and risk assessments should be undertaken from the earliest stages of design and construction, throughout operation and maintenance, and should address the possibilities of human or technological failures, as well as releases resulting from natural disasters or deliberate acts (such as terrorism, sabotage, vandalism, or theft). Such assessments should be repeated periodically and whenever there are significant modifications to the installation.

- Promote a "safety culture" that is known and accepted throughout the enterprise.

The safety culture, reflected in an enterprise's Safety Policy, consists of both an attitude that safety is a priority (*e.g.,* accidents are preventable) and an appropriate infrastructure (*e.g*., policies and procedures). To be effective, a safety culture requires visible top-level commitment to safety in the enterprise, and the support and participation of all employees[20] and their representatives.

- Establish safety management systems and monitor/review their implementation.

Safety management systems for hazardous installations include using appropriate technology and processes, as well as establishing an effective organizational structure (*e.g.,* operational procedures and practices, effective education and training programs, appropriate levels of well-trained staff, and allocation of necessary resources). These all contribute to the reduction of hazards and risks. In order to ensure the adequacy of safety management systems, it is critical to have appropriate and effective review schemes to monitor the systems (including policies, procedures and practices).

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- Utilize "inherently safer technology" principles in designing and operating hazardous installations.

This should help reduce the likelihood of accidents and minimize the consequences of accidents that occur. For example, installations should take into account the following, to the extent that they would reduce risks: minimizing to the extent practicable the quantity of hazardous substances used; replacing hazardous substances with less hazardous ones; reducing operating pressures and/or temperatures; improving inventory control; and using simpler processes. This could be complemented by the use of back-up systems.

- Be especially diligent in managing change.

Any significant changes (including changes in process technology, staffing, and procedures), as well as maintenance/repairs, start-up and shut-down operations, increase the risk of an accident. It is therefore particularly important to be aware of this and to take appropriate safety measures when significant changes are planned - before they are implemented.

- Prepare for any accidents that might occur.

It is important to recognize that it is not possible to totally eliminate the risk of an accident. Therefore, it is critical to have appropriate preparedness planning in order to minimize the likelihood and extent of any adverse effects on health, the environment or property. This includes both on-site preparedness planning and contributing to off-site planning (including provision of information to the potentially affected public).

- Assist others to carry out their respective roles and responsibilities.

To this end, management should co-operate with all employees and their representatives, public authorities, local communities and other members of the public. In addition, management should strive to assist other enterprises (including suppliers and customers) to meet appropriate safety standards. For example, producers of hazardous substances should implement an effective Product Stewardship program.

- Seek continuous improvement.

Although it is not possible to eliminate all risks of accidents at hazardous installations, the goal should be to find improvements in technology, management systems, and staff skills in order to move closer toward the ultimate objective of zero accidents. In this regard, management should seek to learn from past experiences with accidents and near-misses, both within their own enterprises and at other enterprises.

Labor

- Act in accordance with the enterprise's safety culture, safety procedures, and training.

In the discharge of their responsibilities, labor should comply with all the procedures and practices relating to accident prevention, preparedness and response, in accordance with the training and instruc-

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tions given by their employer. All employees (including contractors) should report to their supervisor any situation that they believe could present a significant risk.

- Make every effort to be informed, and to provide information and feedback to management.

It is important for all employees, including contractors, to understand the risks in the enterprise where they work, and to understand how to avoid creating or increasing the levels of risk. Labor should, to the extent possible, provide feedback to management concerning safety-related matters. In this regard, labor and their representatives should work together with management in the development and implementation of safety management systems, including procedures for ensuring adequate education and training/retraining of employees. Labor and their representatives should also have the opportunity to participate in monitoring and investigations by the employer, or by the competent authority, in connection with measures aimed at preventing, preparing for, and responding to chemical accidents.

- Be proactive in helping to inform and educate your community.

Fully informed and involved employees at a hazardous installation can act as important safety ambassadors within their community.

ROLE OF PUBLIC AUTHORITIES

- Seek to develop, enforce and continuously improve policies, regulations, and practices.

It is important for public authorities[21] to establish policies, regulations and practices, and have mechanisms in place to ensure their enforcement. Public authorities should also regularly review and update, as appropriate, policies, regulations, and practices. In this regard, public authorities should keep informed of, and take into account, relevant developments. These include changes in technology, business practices, and levels of risks in their communities, as well as experience in implementing existing laws and accident case histories. Public authorities should involve other stakeholders in the review and updating process.

- Provide leadership to motivate all stakeholders to fulfill their roles and responsibilities.

Within their own sphere of responsibility and influence, all relevant public authorities should seek to motivate other stakeholders to recognize the importance of accident prevention, preparedness and response, and to take the appropriate steps to minimize the risks of accidents and to mitigate the effects of any accidents that occur. In this regard, the authorities should establish and enforce appropriate regulatory regimes, promote voluntary initiatives, and establish mechanisms to facilitate education and information exchange.

- Monitor the industry to help ensure that risks are properly addressed.

Public authorities should establish mechanisms for monitoring hazardous installations to help ensure that all relevant laws and regulations are being followed, and that the elements of a safety manage-

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ment system are in place and are functioning properly, taking into account the nature of the risks at the installations (including the possibilities of deliberate releases). Public authorities can also take these opportunities to share experience with relevant employees of the installations.

- Help ensure that there is effective communication and co-operation among stakeholders.

Information is a critical component of safety programs. Public authorities have an important role in ensuring that appropriate information is provided to, and received by, all relevant stakeholders. Public authorities have a special role in facilitating education of the public concerning chemical risks in their community so that members of the public are reassured that safety measures are in place, that they understand what to do in the event of an accident, and that they can effectively participate in relevant decision-making processes. Public authorities are also in a position to facilitate the sharing of experience (within and across borders).

- Promote inter-agency co-ordination.

Chemical accident prevention, preparedness and response is, by nature, an inter-disciplinary activity involving authorities in different sectors and at different levels. To help ensure effective prevention, preparedness and response, and efficient use of resources, it is important that all relevant agencies co-ordinate their activities.

- Know the risks within your sphere of responsibility, and plan appropriately.

Public authorities are responsible for off-site emergency planning, taking into account the relevant onsite plans. This should be done in co-ordination with other stakeholders. In addition, public authorities should ensure that the resources necessary for response (*e.g.*, expertise, information, equipment, medical facilities, finances) are available.

- Mitigate the effects of accidents through appropriate response measures.

Public authorities (often at the local level) have primary responsibility for ensuring response to accidents that have off-site consequences, to help reduce deaths and injuries, and to protect the environment and property.

- Establish appropriate and coherent land-use planning policies and arrangements.

Land-use planning (*i.e.,* establishing and implementing both general zoning as well as specific siting of hazardous installations and other developments) can help to ensure that installations are appropriately located, with respect to protection of health, environment and property, in the event of an accident. Land-use planning policies and arrangements can also prevent the inappropriate placing of new developments near hazardous installations (*e.g.*, to avoid the construction of new residential, commercial or public buildings within certain distances of hazardous installations). Land-use planning policies and arrangements should also control inappropriate changes to existing installations (*e.g.*, new facilities or

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processes within the installation). They should also allow for the possibility of requiring changes to existing installations and buildings to meet current safety standards.

ROLE OF OTHER STAKEHOLDERS (E.G., COMMUNITIES/PUBLIC)

- Be aware of the risks in your community and know what to do in the event of an accident.

Members of communities near hazardous installations, and others that might be affected in the event of an accident, should make sure that they understand the risks they face and what to do in the event of an accident to mitigate possible adverse effects on health, the environment and property (*e.g.*, understand the warning signals, and what actions are appropriate). This involves reading and maintaining any information they receive, sharing this information with others in their household, and seeking additional information as appropriate.

- Participate in decision-making relating to hazardous installations.

The laws in many communities provide opportunities for members of the public to participate in decision-making related to hazardous installations, for example by commenting on proposed regulations or zoning decisions or providing input for procedures concerning licensing or sitting of specific installations. Members of the public should take advantage of these opportunities to present the perspective of the community. They should work towards ensuring that such opportunities exist, whenever appropriate, and that the public has the information necessary for effective participation.

- Co-operate with local authorities, and industry, in emergency planning and response.

Representatives of the community should take advantage of opportunities to provide input into the emergency planning process, both with respect to on-site and off-site plans. In addition, members of the public should co-operate with any tests or exercises of emergency plans, following directions and providing feedback, as appropriate. (OECD, 2003)

FUTURE RESEARCH DIRECTIONS

The need to solve the issues of major accident prevention follows from long-term development in this area, when at the beginning, stationary risk sources with the greatest content of dangerous substances were dealt with; at present, limits on dangerous substances covered by the Seveso III Directive drop and simultaneously, attention turns to the mobile risk sources, with which the number of accidents in the course of transport of dangerous substances grows. In the next phase, attention will be surely paid to risk sources unclassified in the context of Seveso III Directive that may, above all owing to their locations, represent significant societal risks.

Risk analysis is encountered in individual areas of security; from the point of view of the causes of emergencies, the whole area can be divided into two parts - Safety and Security.

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In the area of "Safety", these are accidental phenomena such as accidents at work, major accidents, natural disasters, etc., and risk analysis can be used in the following areas:

- Work risks (occupational health and safety, hygiene, ergonomics)
- Process safety (prevention of major accidents)
- Fire protection
- Population protection (natural disasters)
- Environmental protection (environmental risks)

In the area of "Security" it is arbitrary abuse with the aim of harming, such as crime, sabotage, terrorism, etc. and risk analysis can be used in areas such as:

- Physical security of persons and property
- Information security (cyber security)

The risk analysis methods presented in this chapter can be used in the above areas of safety and related issues.

Future research direction could follow a new holistic approach and supporting tools according to the Process Safety Research Agenda 21st Century prioritized research topics and categorized to their main character. (De Rademaeker, 2014):

Technical safety topics:

- Hazardous phenomena, properties of substances
- Inherently safer design
- Safety technologies, protection layers, drilling
- Risk assessment, consequence analysis, NaTech
- Complex systems, resilience

Organizational safety topics:

- Process and occupational safety
- Human factors, safety management, safety culture
- Knowledge transfer, learning, standards, easy methods
- Risk management, decision making
- Complex systems, resilience

Current trends of process safety and risk related development show that research is mainly focusing on challenges such as data uncertainty, scarcity of information and complexity of process systems. It is clear that the current research trend has been in the area of inherent safety, dynamic and operational risk assessment, incorporation of human and organizational factors into risk assessment and integration of a safety protection layer (safety instrumented system) into risk assessment. Transition from traditional quantitative risk assessment (QRA) to dynamic quantitative risk assessment (DQRA) is a natural evolution. DQRA enables implementation of inherent safety principles, features most desired in hazardous processes. (Khan, 2015)

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CONCLUSION

Risk assessment is defined as a comprehensive process of determining the severity and probability of an undesirable situations and deciding what safety measures will be taken to eliminate or reduce the risk to an acceptable level. A key question for risk analysis is the choice of an appropriate risk assessment method. Therefore, an overview of selected available risk analysis methods used worldwide has been included in this chapter. The aim of the text was to present basic information about the principles of risk analysis methods that can be used in various areas of safety and security, especially in process safety.

In the first part, possible approaches to quantitative risk assessment are presented; in the further part it focuses on the system of risk management in industrial establishments. The aim of major risk prevention is to operate process installations at an acceptable societal level. Risk acceptability limits can differ depending on the maturity of the state, the size of establishments and a number of other factors that must be, however, included into the analysis and assessment of risks.

That is why the benefits of carrying out the risk assessment are summarized here:

- Risk assessment brings information on the identification of hazards to possible targets of impact; the targets can be employees and installations of the establishment, the surrounding human population and the environment.
- Presents information on possible preventive means and risk reduction priorities.
- Assesses preparedness for accidents and is a source of information for emergency plan preparation.
- Contributes to the satisfaction of conditions of existing legislation.
- Can ensure advantages when making agreements with insurance companies.
- Contributes to prevention against accidents, and thus to lowering the costs of mitigating accident consequences, compensation to affected people, paying penalties for pollution of the environment.
- By suitable publishing the results of risk assessments, the awareness of employees and population will be increased, and thus also the image of the establishment will be improved.

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KEY TERMS AND DEFINITIONS

Hazard: The potential of a physical situation or a chemical to cause harm to human health, property or the environment.

Major Accident: An emergency event such as an explosion, fire or leakage of a toxic substance in an industrial plant that causes death or personal injury, property damage or environmental contamination.

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Process Safety: It deals with the prevention of major accidents in technologies where dangerous chemical substances occur.

Risk: Combination of consequences and probabilities of undesirable event.

Risk Assessment: Hazard identification and consequence and probability assessment process that determines the level of risk.

Risk Management: An overall risk management process involving both risk assessment and risk reduction through technical and organizational barriers.

Safety Barriers: Risk reduction measures that may be a technical and organizational nature.

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Chapter 50
Knowledge Management Influence on Safety Management Practices: Evidence from Construction Industry

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ABSTRACT

Many studies have been conducted in relation with knowledge management (KM), indicating the benefit associated with KM; among which safety management (SM) improvement is one of them. So, the aim of this article is to assess the influence of KM on SM practices in construction industry. In this regard, various factors that affect KM and SM are identified through literature review. Then, a questionnaire survey was facilitated to collect data based on the identified factors. These factors are ranked using a relative importance index (RII) to ascertain the level of importance among its group. Further, correlation analysis and multiple linear regression analysis are carried out to test and measure the strength of the relationship between KM and SM factors. Results indicate that there exists a definite and significant relationship between the factors of KM and SM in construction industry. Overall, the results obtained from the study will assist practitioners and professionals to develop and upgrade KM and SM practices in construction industry.

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1. INTRODUCTION

Construction industry is a project-based industry where team members of a project work together and this team often disintegrates at project termination (Esmi & Ennals, 2009). Due to this dynamic nature of the industry, learning new concepts happens every day by way of addressing certain issues that lead to project success (Karagoz, 2017). However, these new learnings are not captured and result in "re-inventing the wheel" on occurrence of similar issues in the near future. Recommended good practice is to capture these new learnings at the project termination stage (Grover & Froese, 2016). This can reduce significant amount of time spent on solving problems and thereby increases work efficiency by reusing the existing knowledge which is attained through past experience. Recently, there is an increase in number of construction organizations that perceive knowledge management as an integral aspect of business improvement (Robinson et al., 2005). This process is associated with establishing strategies, identifying the necessary resources and evaluating its benefits. One of the associated benefits is improving health and safety aspects. Increase in knowledge level results in better performance and fewer errors and subsequently enhances organizational health and safety (Shirouyehzad et al., 2017). Indeed, capturing knowledge leads to decrease in the rate of accidents and injuries (Floyde et al., 2013). As a result, organizations can apply this captured knowledge to improve their safety management practice. In fact, knowledge management practice has effect on safety management in organizations (Fargnoli et al., 2011; Shirouyehzad et al., 2017).

Proficient knowledge management is vital from a safety perspective for learning purposes to keep mistakes from happening frequently (Gressgård, 2014). Knowledge management implementation strategies can decrease the rate of accidents and injuries, and thereby improve organization safety (Movahedi et al., 2015). This accident repetition phenomenon can be mitigated by effective implementation of knowledge management strategies in construction organizations (Hallowell, 2011). Clearly, there is an association between managing and sharing knowledge among construction professionals as this is of great significance towards benefiting safety performance in organizations. Therefore, this study aims to understand the relationship between factors of knowledge management and its influence on safety management practices in Indian construction industry. By doing so, the study attempts to underline the importance of these factors in order to promote the level of knowledge management as an effort to improve the level of safety in construction organizations.

A theoretical framework is proposed to understand and evaluate factors affecting knowledge management and safety management practices in construction industry. The framework considers the influence of knowledge management factors (knowledge culture, organizational knowledge, effective and systematic approach towards knowledge management, and knowledge management measures) on safety management factors (organizational context, social environment, and individual characteristics) relevant to construction industry. These factors comprise of measurable elements that influence the proposed relationship. In this regard, research hypothesis has been formulated to test these proposed relationships.

1.1. Research Hypothesis

Research hypothesis is defined as a rationally speculated association between two or more variables which needs to be tested and expressed in the form of simple statements (Sekaran & Bougie, 2016). Influence of knowledge management implementation factors on safety management factors is formulated as hypothesis statements as shown in Figure 1.

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The hypothesis for this study is:

H_1: Knowledge management implementation factors have an influence on safety management practices in construction industry.

The null hypothesis is:

H_0: Knowledge management implementation factors do not have an influence on safety management practices in construction industry.

Figure 1. Research hypothesis

2. LITERATURE REVIEW

2.1. Knowledge Management in Construction Industry

Construction is a dynamic and project-based industry where common practice is to capture lessons learned through project reviews that happen at the end of the project (Grover & Froese, 2016). Reuse of existing knowledge picked up through past experience can enormously decrease the time spent on critical thinking and will boost the quality of work. Yusof and Bakar (2012) describe that knowledge management practices are being increasingly acknowledged for much-needed innovation and to improve business performance. Knowledge management is defined as "the practice of selectively applying knowledge from previous experiences of decision making to current and future decision-making activities with the express purpose of improving the organization's effectiveness" (Jennex, 2005). There are two types of knowledge that are present in organizations: tacit knowledge and explicit knowledge. Examples of tacit knowledge include individual experience, rules of the thumb, intuition etc., and explicit knowledge are codified into regulations, instructions, standards reports, guidelines, manuals, databases, etc. Substantial

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efforts have been made by numerous industries to manage, implement and improve systems to capture, store and retrieve project related explicit knowledge (Newel et al., 2006).

However, ample consideration has been paid towards managing tacit knowledge (Lin et.al, 2006). Managing tacit knowledge is extremely important in the construction industry due to its uniqueness and fragmented nature which creates exceptional amount of knowledge amid its execution. Also, due to these qualities, new challenges emerge every day for which the project team react to these issues with possible solutions. In any case, this knowledge mostly remains in the minds of project staff and does not get exchanged within the organization for reuse in upcoming activities (Dave & Koskela, 2009; Shokri-Ghasabeh & Chileshe, 2014; Leal et al., 2017). The main purpose of knowledge management activities is to transform individual and group knowledge to build organizational knowledge that leads to development of knowledge management process in the organization (Lin, 2014). Successful implementation of knowledge management activities in construction creates in business performance and ultimately for collective learning (Ribeiro, 2009). Hence, there is a need to identify the factors influencing knowledge management strategies that construction firms consider for continuous improvement.

2.1.1. Factors Influencing Knowledge Management

Elements supporting the accomplishment of knowledge management can be recognized from authors who have looked into and composed specifically regarding this matter. Holsapple and Joshi (2000) defined a framework for understanding elements that impact the success of knowledge management activities in an organization. Their study has identified and described key elements in three levels; management, resource, and environmental aspects. Davenport and Völpel (2001) established an extensive list of knowledge management success factors comprising of knowledge sharing processes, organization policy frameworks, measuring performance, training initiatives and benchmarking processes. Jennex and Olfman (2006) proposed a knowledge management success model derived from longitudinal study of an engineering organization. This model provides a definite link between knowledge usage and organizational effectiveness. Key dimensions of the model are system quality, knowledge quality, service quality, user satisfaction, perceived benefits, and net impact on individual and organization. Teerajetgul et al. (2009) examined knowledge management practices at the project level in Thai construction projects. The main objective was to identify whether or not knowledge factors influence on-site execution of works. Some of the key factors include established information technology, teamwork, trust, leadership, incentives for knowledge sharing, individual and group level skills and competencies.

The success of knowledge management implementation is determined by identifying influencing elements and understanding their nature. Several elements as identified from review of literature are grouped under four factors are shown in Table 1. The four factors are: (1) knowledge culture: Some of the key elements are - possessing adequate leadership skills and adopting organization leadership policies, emphasis given on communication strategies, providing incentives for knowledge sharing processes, storing and using knowledge assets in the organization; all these factors benefit in developing a knowledge-based culture in the organization; (2) organizational knowledge: variables concerned with the management role for providing necessary commitment to work, managing knowledge with strong vision and objectives for managing future knowledge to improve performance are considered under organization factors; (3) effective and systematic approach towards knowledge management: creating a knowledge environment to update employees, managing human resources, designated roles and responsibilities for employees, providing adequate training and development, effective documentation process of knowledge activities,

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motivational aids for enhancing productivity and usage of proper systems and resources to effectively manage knowledge management processes within the organization; (4) knowledge management measures: knowledge management success can be achieved by setting participative goals, individual commitment of employees and their appreciation. These are some of the key elements concerning the implementation of knowledge management that have an effect on its benefits.

Table 1. List of knowledge management factors

Factors	Selected references
Knowledge culture (KC)	Andreeva & Kianto, 2012; Burstein et al., 2010; Carrillo & Chinowsky, 2006; Davenport & Völpel, 2001; Hasanali, 2002; Jennex & Olfman, 2005; Jennex, 2006; Jennex, & Olfman, 2006; Leibowitz, 1999; McDermott & O'dell, 2001; Ribière & Sitar, 2003; Skyrme & Amidon, 1997; Wang & Noe, 2010; Yeh et al., 2006; Yu et al., 2004
Individual leadership skills (K1)	
Organization leadership policy (K2)	
Knowledge sharing and storage (K3)	
Incentives for knowledge sharing (K4)	
Managing knowledge assets (K5)	
Intra-team communication (K6)	
Management behavior (K7)	
Organizational knowledge (KO)	Davenport & Völpel, 2001; Hasanali, 2002; Holsapple & Joshi, 2000; Jennex & Olfman, 2005; Jennex, & Olfman, 2006; Skyrme & Amidon, 1997; Von Krogh et al., 2012; Yahya & Goh, 2002; Yew Wong & Aspinwall, 2005
Managing individual knowledge (K8)	
Performance measurement (K9)	
Management commitment (K10)	
Establishing necessary KM practices (K11)	
Clear vision and objectives of KM (K12)	
Systematic assessment of future knowledge (K13)	
Effective and systematic approach towards knowledge management (KS)	Alavi & Leidner, 2001; Andreeva & Kianto, 2012; Burstein et al. 2010; Ho, 2009; Jennex & Olfman, 2005; Jennex, & Olfman, 2006; Jennex, 2017; Karagoz, 2017; Wang & Noe, 2010; Yahya & Goh, 2002; Yew Wong & Aspinwall, 2005
Update employee with latest information (K14)	
Human Resource Management (K15)	
Specific roles and responsibilities (K16)	
Training and development (K17)	
Effective documentation process (K18)	
Motivation aids (K19)	
Proper KM system and resources (K20)	
Knowledge management measures (KM)	Burstein et al., 2010; Davenport & Völpel, 2001; Holsapple & Joshi, 2000; Jennex & Olfman, 2005; Jennex, & Olfman, 2006; Krogh et al., 2012; Ribière & Sitar, 2003; Skyrme & Amidon, 1997; Wang & Noe, 2010; Yahya & Goh, 2002; Yew Wong & Aspinwall, 2005
Participation and feedback from employees (K21)	
Individual commitment (K22)	
Constant flow/generation of new knowledge (K23)	

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2.2. Safety Management in Construction Industry

Safety in general means a state of being protected against accident, injury, damage, fatality or similar such undesirable event. Safety management can be defined as "the policies, objectives, organization, management controls, and recourses, which are in place to manage safety, health and environment in all parts of the business" (Zhang et al., 2015). This majorly comprises of manpower, efficient resources and guidelines/policies that intend to decrease accidents and injuries occurring in work process. More recently, management of risk follows an organization's activity in a way that decreases the number of incidents and fatalities and also enhances organizational efficiency and its monetary outcomes (Fernández-Muñiz et al., 2007). Possessing suitable knowledge of organizational safety activities leads workers to safely work in a secure condition. Accordingly, the manager's attitude must lean towards giving adequate training towards safety of workers (Movahedi et al., 2015). Employees can have improved access and knowledge exchange if suitable safety management system is created in the organization.

The purpose of managing safety is to prevent recurrence of accidents or incidents. For this reason, safety management of the organization aims to foresee the occurrence of these accidents and tries to control them. Hence, there is a need to properly identify safety management factors that contribute to enhancing organizational health and safety aspects in the construction industry.

2.2.1. Factors Influencing Safety Management

Safety management for safer work environment is usually carefully designed and implemented based on standard practices being applied in different countries. Number of safety management factors greatly influence the outcomes of its performance.

Aksorn and Hadikusumo (2008) identified safety management success factors that broadly comprise of safety attitudes, teamwork, safety goals, participation in safety programs, communication, evaluation of safety programs, providing safety training, and allocation of resources. These factors were grouped under four headings, namely: management commitment, safety prevention and control system, worker involvement and safety arrangement. Jokkaw and Tongthong (2016) presented factors affecting the status of safety management and its assessment approach in Cambodia's construction projects. Some of the important factors that greatly influence safety management practices are: safety policy and regulations, use of personal protective equipment, budgetary allocation, training and accident investigation.

Elements related to safety management aspects as identified from several literature sources have been grouped into three factors as shown in Table 2. The groups are: (1) organizational context: the organisational context component includes top management involvement and support for safety practices, sufficient resource allocation to safety, clear and realistic goals to comply with safe practices, timely evaluation of safety performance, requirements of health and safety policy within the organization and providing rewards and incentives for safe work practices; these are some of the important variables in relation to the context of organization safety; (2) social environment: this majorly includes behavioral safety in the organization that is needed to define exact roles and responsibilities for safety actions, providing adequate safety education and training to employees of the organization, maintaining proper communication channels for individuals, reporting incidents and analyzing them by taking preventive measures; (3) individual characteristics: this factor deals with safety at the individual level which comprises of an individual's attitude to safety, job satisfaction, and continuing participation of workers in safety programs. Worker's safety attitudes can be shaped by appropriate supervision, working in teams,

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and can be directed by safety meetings and talks for creating awareness among employees. These are some of the key elements that influence safety management practices in the organization.

Table 2. List of safety management factors

Factors	Selected references
Organizational context (SO)	Aksorn & Hadikusumo, 2008; Fang et al., 2006; Fernández-Muñiz et al., 2007; Haadir & Panuwatwanich, 2011; Ismail et al., 2012; Jitwasinkul et al., 2016; Lai et al., 2011; Vinodkumar & Bhasi, 2010; Zou & Sunindijo, 2013
Clear and realistic goals (S1)	
Sufficient resources (S2)	
Support/Induction of safety management programmes (S3)	
Timely evaluation (S4)	
Rewards and incentives for working safely (S5)	
Health and safety policy (S6)	
Management commitment and support (S7)	
Social environment (SS)	Aksorn & Hadikusumo, 2008; de Koster et al., 2011; Durdyev et al., 2017; Fang et al., 2006; Fernández-Muñiz et al., 2007; Haadir & Panuwatwanich, 2011; Ismail et al., 2012; Jitwasinkul et al., 2016; Khosravi et al., 2014; Lai et al., 2011; Vinodkumar & Bhasi, 2010; Zou & Sunindijo, 2013
Good communication (S8)	
Roles and responsibilities (S9)	
Work competency (S10)	
Incident reporting and analysis (S11)	
Safety education and training (S12)	
Leadership skills (S13)	
Individual characteristics (SI)	Aksorn & Hadikusumo, 2008; Fernández-Muñiz et al., 2007; Haadir & Panuwatwanich, 2011; Ismail et al., 2012; Jimoh et al., 2017; Jitwasinkul et al., 2016; Lai et al., 2011; Vinodkumar & Bhasi, 2010; Zou & Sunindijo, 2013
Participation and involvement (S14)	
Job satisfaction (S15)	
Team working capability (S16)	
Personal attitude (S17)	
Supervision of work (S18)	
Regular safety meeting (S19)	

2.3. Relationship Between Knowledge Management and Safety Management Aspects

Several studies suggest that knowledge attained from adequate experience can be effective for elucidating certain problems (Supyuenyong & Swierczek, 2011; Thalmann et al., 2014). The main essence of knowledge management is to capture the lessons learned and implement the best practices associated with the reuse of knowledge. However, safety management practices are implemented with the sole purpose of avoiding recurrence of accidents and injuries (Movahedi et al., 2015). In order to avoid recurrence of accidents or incidents, safety events that possibly cause these issues are carefully dealt by identifying the root cause of the problems. Then a strategy is made to understand the problem and the same is captured with the intention of reusing it in the future. This lesson learned is then applied to problems of

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a similar kind. In the construction industry, significant problems arise due to lack of information about safety practices, lack of compliance with latest laws and regulations, lack of usage of personal protective gears, lack of information on execution of work with sophisticated equipment and devices (Fargnoli et al., 2011). The role of knowledge management in supporting the creation of a learning culture has been a key aspect for preventing accidents both in workers and manager's perspective (Törner & Pousette, 2009).

Studies suggest that managing risks conforms to organization's processes such that it reduces incidents and accidents, and thereby improves both financial and economic outcomes of the organization (Fernández-Muñiz et al. 2007). Possessing suitable knowledge of an organization's safety events aids workers to work safely and create a safe working environment (Movahedi et al. 2015). Possession of this knowledge related to safety can be termed as safety knowledge. Safety knowledge is defined as "employee's understanding of the safety procedures within an organization" (Jiang & Probst, 2016). Effective dissemination of safety knowledge is essential for successfully managing health and safety in the organization (Järvis et al., 2014). Floyde et al. (2013) suggested a model among small and medium enterprises for improving knowledge management through e-learning about job health and safety. This study also suggests that knowledge facilitates the learning process and has a positive impact on safety knowledge and its practices. Nonetheless, employees might have good access and effective knowledge exchange if appropriate safety management system is created in the organization (Håvold & Nesset, 2009).

In recent years, managing and improving knowledge has become a critical issue for which supervisors have shown increasing interest in industrial organizations (Jha & Pandey, 2016; Nguyen & Islam, 2018). Development of this knowledge can be achieved if there is proper support from the management towards allocation of resources, providing training to the employees and thereby cultivating a learning culture in the organization (Jennex & Olfman, 2005). Also, knowledge management greatly influences the learning process within the organization and this, in turn, impacts organizational effectiveness (Jennex & Olfman, 2002). This effectiveness makes the organization perform critical activities that benefit organizations to a greater extent and thereby making it competitive (Jennex, 2008).

In this regard, exploration of knowledge management factors is essential for effective implementation in order to achieve the associated benefits (Nguyen & Islam, 2018). Moreover, knowledge management in the construction industry is required so that duplication of work is minimized and information is easily available and disseminated. This management process includes acquisition, storage, and dissemination of safety knowledge which can be centralized safety capital. Another important benefit and necessity of implementing knowledge management is to improve the working methods and improve the safety status of the industry. Besides, this can facilitate organizational safety thereby reducing accidents and improving safety results.

The gap in literature as found from this review is the influence of knowledge management implementation on safety management practices in the construction industry. Moreover, there is pressing concern for achieving a sustainable competitive advantage by reducing accident rates, improving working conditions, increasing employee motivation and productivity which influences firm's image, reputation, productivity and innovation (Fernández-Muñiz et al., 2009). In this regard, the use of knowledge (i.e. learning and knowledge sharing) is regarded as a critical asset for an organization's competitive advantage (Robinson et al., 2005); and also, as a source of income generation (Teerajetgul et al., 2009). Likewise, construction safety increases organization's competitiveness and profitability (Agwu, 2012; Okoye & Okolie, 2014). In other words, assessment of safety management is crucial to reduce the possible risks to create a safe working environment. The integrated effort needs to be assessed for improving the overall performance

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of organizations. Therefore, assessment of the influence of knowledge management on safety management practices needs further exploration.

3. RESEARCH METHODS

This section highlights the research methods adopted in the study. First, in order to explore the underlying influence, a thorough literature review is carried out to identify the important elements and hypothesis statement has been formulated indicating the theoretical relationship; i.e. influence of knowledge management on safety management practices in construction industry. Following this, a questionnaire-based survey is conducted among stakeholders (client/owner, contractor, consultant, etc.) of the construction industry. Finally, the hypothesis was tested to understand the relationship through statistical analysis.

3.1. Questionnaire Survey Design

Questionnaire survey is preferred as the main method of data collection as it is an effective instrument for acquiring data on approaches toward relationships between variables of interest (Hair et al., 2007). Questionnaire survey covers the following sections: first section covers general information about the respondent and about the company; second section covers statements for each element of knowledge management and safety management pertaining to construction industry. Respondents were asked to rank these elements based on the level of importance with respect to their organization. Likert's five-point measurement scale is used for assessing these elements between 1 = no importance; 2 = little importance, 3 = moderate importance, 4 = important and 5 = extremely important. Initially, a pilot study was done to check the effectiveness of the survey instrument. Following this, necessary modifications was incorporated, and main study data collection was facilitated.

3.2. Sampling Technique and Sample Size for the Study

In India, there are infinite number of working professionals from different companies and hence it is difficult to collect responses from this study area. Hence, a sample that defines the population is considered for this study. The study population considered in this study are individuals operational among stakeholders of Indian construction industry. This study uses purposive sampling; which is a non-probability sampling method for collecting survey responses from some of the stakeholders in Indian construction industry. The sampling frame considered for the study includes stakeholders such as clients/owners, contractors, consultants, etc. The unit of analysis is construction professionals and practitioners in Indian construction industry. The iterative formulae to ascertain the suitable number of participants for the survey as adopted by Hair et al. (2007) was utilized, and is calculated by Equation 1:

$$\mathrm{SS} = \frac{\mathrm{z}^2 * \mathrm{p} * \left(1 - \mathrm{p}\right)}{\mathrm{c}^2}$$

Where: SS = sample size; z = standardized variable (z = 1.96 at 95% confidence interval); p = probability of picking a choice (p = 0.5); c = confidence interval (c = 10%)

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The sample size of 96 is estimated based on the above formula. Generally, in construction industry it is difficult to obtain responses for questionnaire-based survey. As a result, a range of 30-40% response rate is adequate for research in construction industry (Oyewobi, 2014). The new survey sample size is calculated by Equation 2:

$$\text{New sample size} = \frac{\text{SS}}{0.35} = 275 \text{ responses}$$

Therefore, based on the above calculation, 275 questionnaires were circulated for data collection.

3.3. Analysis Methods

The analysis methods focus on identifying the significant influence of knowledge management and safety management attributes. These established factors are ranked using Relative Importance Index (RII) to ascertain the level of importance among its group. Then, correlation analysis is done to find the significant impact among the identified groups. Multiple regression analysis is used to define and establish the relationship between dependent and independent variables. Statistical analysis is carried out with SPSS v.21 software.

3.3.1. RII Analysis

RII analysis is utilized to decide relative importance of different variables of knowledge and safety management. RII is particularly valuable when variables that are compared are on different scales and the resulting indices are utilized to compute a measure of importance. RII's are calculated for each factor as in Equation 3:

$$\text{RII} = \frac{£\text{W}}{\left(\text{A*N}\right)}$$

where 'RII' denotes relative importance index, 'W' denotes weights assigned for variables, 'A' denotes the maximum weight, and 'N' denotes total number of responses.

RII value ranges from 0 to 1; and an element with higher RII value is considered more important than others. The highest RII value corresponds to most critical variable with "Rank-1", followed by second most critical variable with "Rank-2" and so on. The overall ranking is based on considering all the respondent groups (including contractor, client, and consultant). Ranks of the respondent's group were used to determine Spearman's rank order correlation coefficient for elements of knowledge and safety management using the following Equation 4:

$$\text{R}_{\text{S}} = 1 - \frac{6£\text{d}^2}{\text{n}\left(\text{n}^2 - 1\right)}$$

where, 'n' denotes paired ranks, 'd' indicates difference of rank orders.

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Spearman's rank order correlation test is carried out to check agreement level among various respondent groups. This value ranges in between -1 to +1. If 'R_s' value is statistically significant at a significance level ($p < 0.05$), then it indicates that there is no significant correlation between the respondent's group and therefore the defined null hypothesis can be rejected (Tripathi & Jha, 2018).

3.3.2. Correlation Analysis

Correlation analysis is done by determining the Pearson correlation coefficient to check whether the factors of knowledge management and safety management were statistically correlated. This is a measure of determining the strength of relationship between two variables (Hair et al., 2007). Equation 5 is to compute correlation coefficient (r) and is given by:

$$r = \frac{n\left(£xy\right) - \left(£x\right)\left(£y\right)}{\sqrt{\left[n£x^2 - \left(£x\right)^2\right]\left[n£y^2 - \left(£y\right)^2\right]}}$$

where, "x" and "y" are any pair of variables whose level of correlation is being sought.

The coefficient value of +1 represents a perfect positive correlation between the variables. On the contrary, value of -1 represents a perfect negative correlation between the variables.

3.3.3. Multiple Linear Regression (MLR) Analysis

Multiple linear regression (MLR) analysis is an approach for investigating the relationship between a dependent variable with two or more independent variables (Hair et al., 2007). The extent to which each factor of knowledge management contributes to safety management factors is predicted by Multiple Linear Regression (MLR) analysis. This analysis is used to define the relationship of each dependent factor of safety management to that of each independent factor of knowledge management.

4. RESULTS AND DISCUSSION

4.1. Demographic Profile of Survey Respondents

A total of 275 questionnaires were circulated for data collection, among them 123 valid responses were obtained (Response rate = 42.4%). The demographics of survey respondents are as shown in Table 3. The minimum criteria of survey respondents to be considered for the study possession of minimum two years working experience in the industry. In general, the survey respondents were familiar with knowledge and safety management practices in the industry, which improved the quality of the survey data collected and this articulates the analysis results to a greater extent.

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Table 3. Demographics of survey respondents

Variables	Category	Frequency (n = 123)	Percentage (%)
Gender	Male	93	75.6
	Female	30	24.4
Years of experience	2 to 5 years	101	82.1
	6 to 10 years	18	14.6
	>10 years	4	3.3
Type of organization	Client/Owner	20	16.3
	Contractor	35	28.4
	Consultant	61	49.6
	Others	7	5.7
Size of company	Small (Less than 200 employees)	31	25.2
	Medium (200-500 employees)	56	45.5
	Large (More than 500 employees)	36	29.3

4.2. RII Analysis

RII values for each of the variables is computed using equation 3 as explained in the earlier section. The detailed ranking of KM and SM variables are highlighted in Table 4 and Table 5 respectively. Results of RII show that attributes such as intra-team communication skills (RII = 0.8813), individual commitment (RII = 0.8764) and knowledge sharing and storage (RII = 0.8650) carry more weight among KM implementation factors; and safety education and training (RII = 0.8829), incident reporting and analysis (RII = 0.8813), and timely evaluation (RII = 0.8732) play a prominent role in improving SM practices in construction industry.

Ranking of KM and SM variables is tested among various respondent groups to test the level of significance among stakeholders in construction projects. The correlation among various respondent groups on knowledge and safety management variables is shown in Table 6 and Table 7 respectively. Results indicate that there is significant relationship in rankings between the respondent groups. Weak correlations are observed in KM respondent group and moderate correlations exist among SM respondent groups. This may be due to the fact that the knowledge exchange between the respondent groups is comparatively less and participation and feedback towards effective knowledge sharing is minimum (Jha & Pandey, 2016; Nguyen & Islam, 2018) and thereby creation of new knowledge is limited among different stakeholders of construction projects. However, there exists good safety compliance with specific roles and responsibilities for active participation and involvement with established regulatory health and safety policy among different stakeholders to work safely on construction projects.

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Table 4. Ranking of KM variables in construction industry

Sl. No.	Knowledge management variables	Variable id	Contractor group		Client group		Consultant group		All group	
			RII	Rank	RII	Rank	RII	Rank	RII	Rank
1	Intra-team communication	KC 6	0.886	15	0.930	2	0.885	1	0.881	1
2	Individual commitment	KM 2	0.880	4	0.920	7	0.875	3	0.876	2
3	Knowledge sharing and storage	KC 3	0.874	9	0.920	1	0.872	6	0.865	3
4	Training and development	KS 4	0.874	5	0.920	3	0.859	12	0.865	4
5	Constant flow/generation of new knowledge	KM 3	0.869	1	0.910	4	0.856	13	0.863	5
6	Proper KM system and resources	KS 7	0.863	18	0.910	16	0.853	2	0.857	6
7	Systematic assessment of future knowledge	KO 6	0.857	12	0.900	14	0.849	4	0.855	7
8	Organization leadership policy	KC 2	0.857	7	0.890	8	0.846	14	0.850	8
9	Clear vision and objectives of KM	KO 5	0.851	10	0.890	13	0.846	16	0.850	9
10	Specific roles and responsibilities	KS 3	0.851	16	0.890	6	0.839	11	0.850	10
11	Participation and feedback from employees	KM 1	0.846	8	0.890	17	0.839	9	0.850	11
12	Managing knowledge assets	KC 5	0.846	3	0.890	19	0.839	10	0.849	12
13	Performance measurement	KO 2	0.846	17	0.880	18	0.839	5	0.849	13
14	Management commitment	KO 3	0.846	20	0.880	10	0.836	7	0.849	14
15	Update employee with latest information	KS 1	0.840	6	0.880	21	0.836	8	0.846	15
16	Effective documentation process	KS 5	0.840	14	0.870	15	0.833	15	0.846	16
17	Establishing necessary KM practices	KO 4	0.834	2	0.870	11	0.830	23	0.844	17
18	Proper KM system and resources	KC 7	0.834	23	0.850	9	0.823	17	0.836	18
19	Individual leadership skills	KC 1	0.829	19	0.840	5	0.816	20	0.833	19
20	Managing individual knowledge	KO 1	0.829	11	0.840	20	0.813	18	0.833	20
21	Motivation aids	KS 6	0.823	21	0.830	12	0.813	19	0.828	21
22	Human Resource Management	KS 2	0.817	13	0.820	22	0.813	22	0.823	22
23	Incentives for knowledge sharing	KC 4	0.811	22	0.780	23	0.810	21	0.808	23

4.3. Correlation Analysis

Correlation analysis for each of KM and SM factors is computed using equation 5. Correlation matrix is formulated for KM and SM factors as shown in Table 8.

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Table 5. Ranking of SM variables in construction industry

Sl. No.	Safety management variables	Variable Id	Contractor group		Client group		Consultant group		All group	
			RII	Rank	RII	Rank	RII	Rank	RII	Rank
1	Safety education and training	SS 5	0.880	2	0.930	2	0.869	5	0.883	1
2	Incident reporting and analysis	SS 4	0.874	1	0.930	1	0.862	3	0.881	2
3	Timely evaluation	SO 4	0.869	8	0.920	7	0.862	1	0.873	3
4	Roles and responsibilities	SS 2	0.863	4	0.910	4	0.859	2	0.873	4
5	Sufficient resources	SO 2	0.857	5	0.900	3	0.856	11	0.865	5
6	Support/Induction of safety management programs	SO 3	0.851	14	0.900	5	0.856	4	0.863	6
7	Rewards and incentives for working safely	SO 5	0.851	3	0.890	16	0.853	8	0.860	7
8	Leadership skills	SS 6	0.846	6	0.890	10	0.849	7	0.860	8
9	Regular safety meeting	SI 6	0.846	15	0.890	15	0.849	6	0.857	9
10	Health and safety policy	SO 6	0.846	13	0.890	8	0.843	10	0.854	10
11	Personal attitude	SI 4	0.846	11	0.880	14	0.839	9	0.854	11
12	Supervision of work	SI 5	0.840	12	0.880	12	0.836	14	0.852	12
13	Management commitment and support	SO 7	0.840	9	0.870	13	0.833	13	0.847	13
14	Clear and realistic goals	SO 1	0.834	7	0.860	11	0.833	18	0.844	14
15	Good communication	SS 1	0.834	16	0.860	9	0.830	16	0.837	15
16	Work competency	SS 3	0.829	17	0.850	6	0.823	19	0.837	16
17	Job satisfaction	SI 2	0.823	19	0.850	19	0.820	12	0.836	17
18	Participation and involvement	SI 1	0.817	18	0.850	17	0.816	15	0.834	18
19	Team working capability	SI 3	0.811	10	0.810	18	0.816	17	0.833	19

Table 6. Correlation among various respondent groups on knowledge management variables

Sl. No.	Rank comparison of respondents group	Spearman's rank Correlation coefficient, R	Significance level, p	Conclusion
1	Contractor versus Client	0.13	0.00	Reject H_0 at p = 5%
2	Contractor versus Consultant	0.11	0.00	Reject H_0 at p = 5%
3	Client versus Consultant	0.23	0.00	Reject H_0 at p = 5%

Table 7. Correlation among various respondent groups on safety management variables

Sl. No.	Rank comparison of respondents group	Spearman's rank correlation coefficient, R	Significance level, p	Conclusion
1	Contractor versus Client	0.50	0.00	Reject H_0 at p = 5%
2	Contractor versus Consultant	0.50	0.00	Reject H_0 at p = 5%
3	Client versus Consultant	0.45	0.00	Reject H_0 at p = 5%

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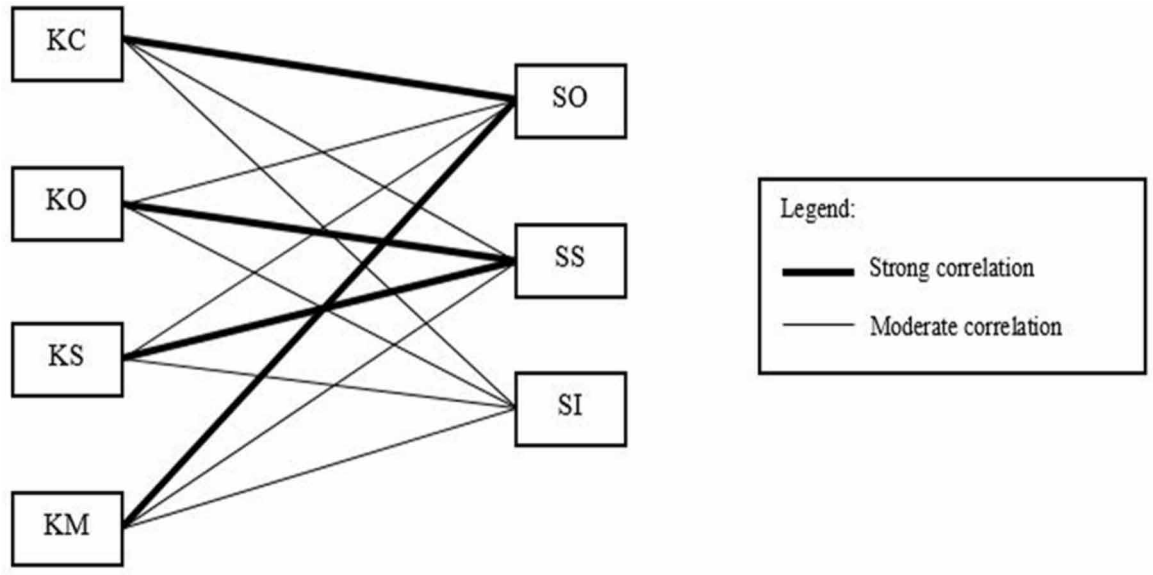
Results indicate that all variables under knowledge and safety management factors are positively correlated. Results of correlation analysis yielded knowledge culture (KC) was strongly correlated to organization context (SO) [r (123) = 0.712, p<0.01]. Organization knowledge (KO) was strongly correlated to social environment (SS) [r (123) = 0.661, p<0.01]. Effective and systematic approach towards knowledge management (KS) was strongly correlated to social environment (SS) [r (123) = 0.703, p<0.01]. Lastly, knowledge management measures (KM) was strongly correlated to organization context (SO) [r (123) = 0.523, p<0.01]. The perceived statistical relationship (Figure 2) obtained by Pearson correlation was conducted to examine the relationships between factors of knowledge management and safety management. These findings indicate that KC explains much more of the variability in SO than other significant correlations among factors of knowledge management and safety management.

Table 8. Correlation matrix of knowledge management and safety management factors

Factors	KC	KO	KS	KM	SO	SS	SI
Knowledge culture (KC)	1						
Organizational knowledge (KO)	0.718**	1					
Effective and systematic approach towards knowledge management (KS)	0.628**	0.691**	1				
Knowledge management measures (KM)	0.486**	0.482**	0.414**	1			
Organizational context (SO)	0.712**	0.658**	0.620**	0.523**	1		
Social environment (SS)	0.668**	0.661**	0.703**	0.495**	0.729**	1	
Individual characteristics (SI)	0.556**	0.514**	0.367**	0.411**	0.619**	0.493**	1

Note: **Correlation is significant at the 0.01 level (2-tailed)

Figure 2. Perceived statistical relationships between KM and SM factors



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4.4. Multiple Linear Regression (MLR) Analysis

Multiple linear regression (MLR) analysis is done to evaluate the strength of the relationship between factors of KM and SM. In this regard, factors of KM i.e. KC, KO, KS and KM are considered as predictor variables/independent variables and factors of SM i.e. SO, SS and SI are considered separately as dependent variables. The regression models are presented in Table 9.

As shown in Table 9, four factors defined in the established knowledge management model explain at least 59.5% of the variance in most of safety management factors. This is considered to be satisfactory. Both Model 1 (SO) and Model 2 (SS) are defined by knowledge management factors, viz. KC, KS, and KM; as they are statistically significant in explaining the models. An exception can be found for Model 3 (SI), which is indicated by only two knowledge management factors, viz. KC and KO; as they are statistically significant in explaining model 3. In Model 3, four knowledge management factors explain only 35.7% of the variance for SI factor. Also, from Table 9, knowledge management factor KC makes the strongest impact in explaining most safety management factors. Therefore, in order to excel safety management practices, organizations should aim to develop and maintain a positive knowledge culture (Fargnoli et al., 2011; Zou, 2010). This is also consistent with the results of correlation analysis.

Given these inferences, hypothesis H_1 is accepted ($p < 0.05$) i.e. knowledge management implementation factors have an influence on safety management practices in construction industry subject to some minor deviations in individual characteristics factor of safety management. Therefore, the following two sub-hypotheses will be accepted ($p < 0.05$):

$H_{1.1}$: Knowledge management implementation factors have an influence on safety management practices that is measured by organizational context and social environment.

$H_{1.2}$: Knowledge management factors - knowledge culture and organization knowledge are responsible for safety management practices that are measured by individual characteristics factor alone.

Table 9. Multiple linear regression models

Predictor	Unstandardized coefficients (Beta)		
	Model 1 SO	**Model 2 SS**	**Model 3 SI**
Constant	0.886	0.654	1.101
KC	0.362**	0.245**	0.444**
KO	0.139	0.131	0.271**
KS	0.182**	0.386**	-0.119
KM	0.119**	0.101**	0.138
R	*0.771*	*0.778*	*0.597*
R^2	*0.595*	*0.606*	*0.357*

Note: **Correlation is significant at the 0.05 level (2-tailed)

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5. RESEARCH IMPLICATIONS

Knowledge management studies primarily focus on creation and management of an environment that urges knowledge to be acquired, shared, learned and utilized that benefits the organization. In the construction industry, developing effective knowledge management needs; developing a central database as a collection mechanism (forms, formats and reporting) from different projects, analyzing the collected information and storing it based on its appropriateness; dissemination through training and development; and finally devising a mechanism to monitor and control the system. Results of analysis show the importance of different activities that are grouped under four factors (knowledge culture, organization knowledge, effective and systematic approach, and knowledge management measures) for development of the system as perceived by the respondents. Knowledge management effectiveness is greatly influenced by intra-team communication process which drives knowledge transfer in organizations (Alavi & Leidner, 2001). Efficient and effective knowledge generated is key to project success and requires commitment from individuals of all stakeholders in construction projects (Ruikar et al., 2007). The role of management in sustaining knowledge management process is by providing adequate training to the employees and thereby generating and maintaining constant flow of new information or knowledge (Teerajetgul et al., 2009). On the other hand, organizations need to educate and train employees so that workplace accidents and incidents may be prevented. These events may be eradicated with proper reporting systems and analyzing the causal factors. The process may be evaluated at regular intervals to enhance safety outcomes. Active involvement of employees in understanding roles and responsibilities is required for successful implementation of safety practices in the organization. Also, sufficient safety resources need to be allocated to construction projects as it is essential in achieving goals of organizational health and safety. Achievement of the above needs understanding the benefits of knowledge management and commitment by top management. These are some of the areas which should be considered for improving the benefits associated in implementing knowledge and safety management practices in the construction industry.

The ultimate aim of the study is to understand and evaluate the causal relation between knowledge and safety management practices in the construction industry. This benefits the organization in numerous ways. It helps in building policies and regulatory frameworks (Toh et al., 2016), timely evaluation of organizational effectiveness which is measured by developing key performance indicators (Jennex, 2012; 2017), organizational culture is developed resulting in learning and sharing of knowledge (Jennex et al., 2012), improving productivity of workers engaged in construction work or activities (Jennex, 2008); and thereby building the reputation of the company and ultimately results in the growth of the industry. These are some of the benefits associated with implementing knowledge management practices in the construction industry. For effectively understanding the influence of the benefits, measuring the underlying variables is required to predict the outcomes. Therefore, measuring some of the key elements in knowledge management aspects is necessary as it helps to evaluate knowledge management processes in construction industry which will also take into account the evaluation of safety activities in the organization. If a company does not have effective knowledge management processes, then it is advisable to develop and integrate knowledge management processes into a company's policies, as it can assist managers in utilizing knowledge during the project and also for successive projects (Jennex et al., 2003). And at a later stage, companies can focus on safety management features and strive towards its development. This helps the company to focus on sustaining safety at workplace by complying to safety standards and thereby creating a safe work environment. Once there exists a safe working environment, there is always room for improvement in correcting mistakes and learning within the organization

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(Jennex & Olfman, 2002). The need to have knowledge management process within an organization ensures that knowledge gained from previous projects is effectively captured and reused. If companies do not have knowledge management implementation strategies, then it is quite difficult to capture and reuse the knowledge and attain the desired benefits (Jennex, et al., 2003). However, KM implementation practices have an impact on both individual and at organization level. Overall, the results obtained from the study will assist practitioners and professionals to develop and upgrade KM and SM practices in the construction industry.

6. LIMITATIONS AND FUTURE SCOPE OF STUDY

The study adopts a cross-sectional approach (i.e. data is collected at a specific time) to collect and analyse the survey data. The generalisability of the study findings could be increased by future studies based on larger samples of participants from diverse industry sectors and cultural backgrounds. In addition, qualitative investigations with larger scope could also provide more insights into the phenomenon under investigation and provide further evidence for validating the quantitative findings. The factors considered in this study can be further tested for their effectiveness in implementation in similar such construction organizations. This would highlight the strengths and weaknesses of knowledge and safety management practices in those construction organizations. The present study was carried out by exploring the influence of knowledge management factors on safety management practices in Indian construction industry (from a specific geographical region i.e. India). This can be further taken ahead by comparing the study outcomes with other countries and a generalized framework can be formulated to conceptualize the study findings.

7. CONCLUSION

Construction industry operates differently from other industries and is regarded as a competitive business with high risk and low profit margins. In this case, organizations face the challenge of how to best manage their knowledge to increase competitiveness. This is because knowledge management is regarded as a fundamental process of managing organizations. Utilizing key knowledge attributes helps to minimise the risks associated in construction safety practices contributes to effectively manage organizations. In this regard, researchers have focused on understanding the factors affecting knowledge management and safety management separately. However, this study focuses on identifying the influence of knowledge management factors on safety management practices in construction industry. This is facilitated by identifying knowledge and safety attributes that exhibit a significant relationship.

The main contribution of this study can be summarized as ranking of knowledge and safety management variables considering their significance as perceived by different stakeholders of the construction industry. This enables us to identify critical variables which have significant level of agreement among the respondent groups that affect industry practices. Perception of different stakeholders (including clients, contractors, and consultants) are compared and assessed in detail. This assessment provides a good view of the ability of organizational culture to support and implement KM practices in the organization. Additionally, the assessment also shows the impact of stakeholders on perceiving KM and SM factors by indicating the strengths and weaknesses across different areas. Analysis revealed that intra-team com-

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munication skills, individual commitment, and knowledge sharing and storage carry more weight among KM implementation factors; and safety education and training, incident reporting and analysis and timely evaluation play a prominent role towards improving SM practices in the construction industry. Analysis results also show that statistically there is a strong positive correlation between factors of knowledge management and safety management from the perspective of practitioners in the Indian construction industry. Positive correlation existing between safety and knowledge management factors indicates that organizations strive to develop knowledge culture for fostering individual and group level safety. The greatest barrier in capturing knowledge related to safety at the individual and group-level is influenced by knowledge culture. Developing knowledge culture in the organization has shown positive influence towards individual, behavioral and organizational safety. Safety at the individual level solely depends on established knowledge management practices imposed by the organization. This can be achieved by adopting a systematic approach to effectively managing the knowledge management process within the organization. Systematic approach towards implementing knowledge management practices impacts safety at both worker level and at organization level. Effectiveness of measuring knowledge management practices need to be evaluated in order to create safe working environment for the employees. Furthermore, the proposed models indicate that safety management factors are supported and explained by knowledge management factors thus validating the proposed relationship. This established relationship could allow an in-depth study of the influence of knowledge management on safety management practices, as well as describing the relationship between the underlying factors. Findings of the study enable industry practitioners and professionals to find out which issues should be focused for beneficial action towards knowledge management and safety management in construction industry.

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Chapter 51
Regulating Occupational Health and Safety in EU and China:
From a Comparative Law Perspective

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ABSTRACT

Occupational health and safety (OHS) is an important aspect of the labour protection field. This chapter compares OHS legal regimes of China and EU. Comprehensive workplace health and safety legislations of the two systems are described, and the different aspects, including for example, legislative aim, the legislation structure, general obligation, OHS insurance, moral harassment, law enforcement, etc., are detailed. Based on the analysis, conclusions are made and policy recommendations from both legislation aspect and enforcement aspect are provided.

INTRODUCTION

The EU Workplace accident and disease prevention have been the focus of law-making activity in European Union (EU) since the creation of the common market in 1950 when the European Coal and Steel Community begins to unite European countries economically and politically in order to secure lasting peace. In more than half a century, the EU occupational health and safety (OHS) law grew from nothing into the present legal system (Liu & Liu, 2015), which centers on the Framework Directive 89/391(see hereafter). The modern Chinese occupational health and safety law started from the foundation of the People's Republic of China in 1949 and has formed system centering on the Work Safety Law (WSL) and Occupational Disease Prevention Law (ODPL). This research is set to compare the two systems and see from what aspects the Chinese system may benefit from the EU system. To serve this purpose, the OHS rules and their application in the EU law and the Chinese law are compared in this chapter. The aim of the comparison is to investigate whether what convergences and divergences exist between the EU system and the Chinese system. Answering these questions might provide some clues to under-

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stand how the OHS are regulated respectively in China and EU, and as such is requisite for providing potential recommendations for improving the Chinese system. As commented by Örücü, the comparative lawyer must discover and describe uniformities and differences on the basis of the information s/he has collected and described. (Örücü, 2006). This comparative research is ordered in three topics: the convergences, divergences and the variables between OHS systems of the two jurisdictions. Among them, the variables concern the differences, as divergences do. However, variables concern the factors that are of either non-legal nature or legal nature but not OHS law nature. Based on the comparison, a conclusion would be drawn.

Before analyzing the legal systems, it is necessary to know some information about their economic and labour market contexts in order to better understand the differences between the two jurisdictions. Here three important economic labour market indicators are presented. Regarding EU, according to the data published by the EU's statistical agency --- the Eurostat, the total number of labour force was 218,375,000 people in 2016 (Eurostat, 2016), the unemployment rate was 9.6% (Eurostat, 2017), and the labour participation rate 72.9% (Organisation for Economic Co-operation and Development, 2015). Correspondingly, the data's of China are 806,460.14 (World Bank, 2016), 4.02% (People's Congress, 2017), and 71.0% (World Bank, 2016).

LEGAL SYSTEMS

The EU

EU's regulation of OHS was traced back to the foundation of the European Coal and Steel Community. (Hale,1984; Liu & Liu, 2015; Majone, 1993). According to Liu and Liu, the evolution of the EU/EC has defined the progress OHS protection. Over the decades spanning from the beginning of ECSC, through establishing EEC and through several rounds of enlargements, to the final establishment of the EU, it can be observed that the technique of legislative intervention evolved from safeguards, based on detailed and highly technical normative acts, to a different kind of regulation which is more based on general protection duties and principles (Liu & Liu, 2015).

Nowadays, OHS has already become one of the key focus areas of law-making activity since the creation of the common market (Liu & Liu, 2015). The EU OHS system is built the landmark Directive 89/391. In general, the Directive 89/391/EEC lays down employers' general obligations to ensure workers' health and safety in every aspect related to work, 'addressing all types of risk' (Sabel & Zeitlin, 2008; Liu & Liu, 2015). It is also a Framework Directive that established general principles, including risk assessment, avoidance, substitution and prevention. The Directive served as a basis for later individual directives dealing with specific issues such as those on workplaces, personal protective equipment, work equipment, manual handling of loads and display screen equipment (Nicholson, 2002; Liu & Liu, 2015). The individual Directives define how risks are to be assessed, and the setting and measuring limit of values at the workplace. Article16 paragraph 3 of the Framework Directive states that its general provisions shall apply in full to all the areas covered by each individual Directive (See Article16, paragraph 3 of the Framework Directive). Until the day of writing, in total 19 directives have been adopted, which are compiled in the European Agency for Safety and Health at Work (EASHW) 's website (European Agency for Safety and Health at Work, 2017). According to EASHW, these directives are categorized into six topics: (a) Workplaces, equipment, signs, personal protective equipment; (b) Exposure to chemi-

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cal agents and chemical safety; (c) Exposure to physical hazards; (d) Exposure to biological agents; (e) Provisions on workload, ergonomical and psychosocial risks; and (d) Sector specific and worker related provisions (European Agency for Safety and Health at Work, 2017), as shown in the following table. The individual directives define how to assess these risks and, in some instances, set limit values for certain substances or agents. According to EU system, all the directives shall be transposed into domestic law of Member States (MS), in order to ensure that national law is fully in alignment with EU OHS legislation.

Table 1. Daughter directives under the framework directive

Workplaces, equipment, signs, personal protective equipment	Directive 2009/104/EC – use of work equipment
	Directive 99/92/EC - risks from explosive atmospheres
	Directive 92/58/EEC - safety and/or health signs
	Directive 89/656/EEC - use of personal protective equipment
	Directive 89/654/EEC - workplace requirements
Exposure to chemical agents and chemical safety	Directive 2009/161/EU - indicative occupational exposure limit values
	Directive 2009/148/EC - exposure to asbestos at work
	Directive 2006/15/EC - indicative occupational exposure limit values
	Directive 2004/37/EC - carcinogens or mutagens at work
	Directive 2000/39/EC - indicative occupational exposure limit values
	Directive 98/24/EC - risks related to chemical agents at work
	Directive 91/322/EEC - indicative limit values
Exposure to physical hazards	Directive 2013/59/Euratom - protection against ionising radiation
	Directive 2013/35/EU - electromagnetic fields
	Directive 2006/25/EC - artificial optical radiation
	Directive 2003/10/EC - noise
	Directive 2002/44/EC - vibration
	Directive 96/29/Euratom - ionizing radiation
	Directive 90/641/Euratom - outside workers in controlled areas (ionizing radiation)
Exposure to biological agents	Directive 2000/54/EC - biological agents at work
Provisions on workload, ergonomic and psychosocial risks	Directive 90/270/EEC - display screen equipment
	Directive 90/269/EEC - manual handling of loads
Sector specific and worker related provisions	Directive 2010/32/EU - prevention from sharp injuries in the hospital and healthcare sector
	Directive 94/33/EC - young workers
	Directive 93/103/EC - work on board fishing vessels
	Directive 92/104/EEC - mineral-extracting industries
	Directive 92/91/EEC - mineral-extracting industries – drilling
	Directive 92/85/EEC - pregnant workers
	Directive 92/57/EEC - temporary or mobile construction sites
	Directive 92/29/EEC - medical treatment on board vessels
	Directive 91/383/EEC - fixed-duration or temporary employment relationship

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Generally, the EU OHS system formulation is seen as a social dimension of European integration (Majone, 1993) --- which has been actively pursued during the past fifty years. It is at least partly through the adopting of OHS legislations that the capacity of the European Union to effect patterns of social exclusion is potentially deployed (Walby, 1999). The FD where the system centers on establishes general principles for managing safety and health, such as responsibility of the employer, rights/duties of workers, using risk assessments to continuously improve company processes, and workplace health and safety representation. All subsequent Directives within the meaning of Article 16 (1) of the Framework Directive follow these common principles. The Directive 89/391 established a general duty for employers to assess and prevent or reduce risks to safety and health at work. Indeed, the general duty fails expressly to mention against moral harassment at work. Yet, according to Liu's research, the current position of the European Commission is that moral harassment is covered under this directive. This is because, under the terms of Article 6(1), employers are obliged to assess all the risks, including, inter alia, those related to chemical agents, work equipment and the design of workplaces. The list is not exhaustive and the national legislation enacted in application of this directive has been extensively used in relation to workplace violence (Liu, 2015). The EU system has paid considerable attention to occupational health and safety in small to medium-sized enterprises (SMEs), which are a key sector in EU's economy and are vital to achieving EU economic goals (Hämäläinen, 2008).

According to Champoux and Brun, the nature of the OHS problems in small firms and the factors explaining the higher relative risk level are a topic of primary interest, for two reasons: firstly, they are more fragile financially; and secondly, their owner-managers tend to be personally responsible for virtually all management functions in their firms without any management training (Champoux & Brun, 2003).

To combatting this problem, the EU advocates the OHS services, which are external services and can provide professional OHS preventative services to SMEs. The model of preventive OHS service advocated by the EU Framework Directive 89/391 is an integrated one in which the pro-vision of occupational medicine, safety, hygiene, ergonomics, and work psychology is part of a 'holistic' approach towards the prevention of injury and ill-health and the improvement of working conditions and the working environment (James & Walters, 2002). A further distinctive feature of this approach is that workers and their representatives are centrally involved in both the oversight of the operation of such services and in carrying out the risk assessments that are the procedural basis to current approaches to health and safety management (James & Walters, 2002). The transposition of the EU directives led many countries to produce and to implement new laws and regulations, in order to conform to EU system. According to Jacinto and Aspinwall, the EU member states acted at different speeds and with different levels of detail, mostly depending on their own ''state-of-the-art'' and stage of development (Jacinto & Aspinwall, 2004).

China

The legislative structure of OHS in China is based on the Constitution. Its Article 42 provides:

By using various means, the state creates conditions for employment, strengthens labor protection, improves working conditions and, on the basis of expanded production, increases remuneration for work and social benefits… The state provides necessary occupational training to citizens before they are employed.

Furthermore, the structure consists of laws, administrative regulations, local regulations, departmental rules, local rules and OHS standards. Among them, two major OSH laws are Work Safety Law

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(WSL), and Occupational Diseases Prevention Law (ODPL), which functions as the foundation of the whole OHS system and deal respectively with safety and health issues at workplace (Brown, 2009). Other relating laws include Mines Safety Law (MSL), Labour Law, Labour Contract Law, Fire Protection Law, Emergency Response Law and Criminal Law. The major regulations are Regulations on Coal Mine Safety Inspection, Special Regulations of the State Council on Preventing Coal Mine Accidents, Regulations on Safety Management in Construction Projects, Regulations on the Safe Administration of Hazardous Chemicals, Regulations on Fireworks and Firecracker Safety Management, Regulations on Work Safety Licenses, Regulations on Civil Explosive Products Safety Management, Regulations on Special Equipment Safety Inspection, Regulations on Safety Supervision and Management of Agricultural Machinery, Regulations on Ascertaining Administrative Responsibility in Extraordinarily Serious Safety Accidents, Regulations on Work Injury Insurance, and Regulations on Reporting, Investigation and Handling of Work Safety Accidents, as compiled by International Labor Organization in its LEGOSH database. (LEGOSH Database, 2014).

With respect to the two primary laws, namely the Work Safety Law and the Occupational Disease Prevention Law. According to Pringle and Frost's compilation, the Work Safety Law stipulates 14 basic systems and/or measures. The important ones are: (a). A production unit must meet all the relevant laws, regulations, and industry-specific laws (such as the Coal Safety Law), otherwise it may not undertake production activities; (b) An enterprise must appoint an individual who is responsible for all aspects of safety; (c) An enterprise must also implement a safety management organization or individual; (d) An enterprise must implement a system of education, training, and assessment of safety knowledge of OHS directors (that is, personnel with overall responsibility), OHS managers, and workers; (e) Enterprises must implement a system of three simultaneous [OHS] measures at all stages of all projects; that is, OHS measures should be evident at the planning stage, during construction (of plant and so on), and when production is under way; (f) Production units must register exceptionally dangerous hazards with the local safety inspectorate; (g) Enterprises must implement a safety management system specifically addressing workplaces where explosives, working at height, and other dangers are involved (Pringle & Frost, 2003).

According to Su's compilation, the Occupational Disease Prevention Law (ODPL), adopted in 2001, defines the occupational health rights of workers, the obligations and duties of employers to protect the health of their employees, the responsibilities of the governments at various levels, and trade unions' representation in workers' health protection. The law stipulates basic principles governing the prevention and control of occupational disease, protective measures, hazards monitoring and management in workplaces, diagnosis of occupational disease, health authority inspections, and the liabilities incurred by those violating the law and control of occupational disease, protective measures, hazards monitoring and management in workplaces, diagnosis of occupational disease, health authority inspections, and the liabilities incurred by those violating the law (Su, 2003).

COMPARATIVE OBSERVATION

In the previous sections, the legal systems in regulating OHS in EU and China were discussed. The legislative frameworks and how the laws are implemented in the two countries with regard to what respective roles played by public enforcement agencies, the workers' representing bodies, as well as the individual workers are identified. Following the comparative methodology proposed in the first Chapter, this sec-

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tion summaries the convergences and divergences by 'analogy, distinction and contrast' and identifies the variables that may give rise to the divergences presented above. By situating China in its current transitional phase, the context of contemporary China is also assessed by referring to the experiences of the EU to produce a better understanding of the uniqueness of Chinese problems.

Convergence

Mapping out convergence is important. The comparative study would benefit from the findings of convergence because it can help understand to what extent the Chinese system is similar to that of the EU. The OHS legal systems in the EU and China present some converging features, which are summarized below. This converging process is advanced both by domestic demands, such as increasing publicity of industrial accidents and emerging new occupational risks, and by the common OHS legal norms.

First, based on an examination of the legal policies in the China and EU in the field of regulating OHS, it is clear that the protecting workers from occupational hazards are gaining prevalence in the two jurisdictions' political and legal agendas, which can be observed in three aspects. First, both jurisdictions have adopted a statutory framework to combat occupational hazards and to secure a healthy and safe working environment. OHS in China are mainly legislated into two distinct systems, namely the safety work system and the occupational diseases control and prevention system.

Second, both systems are of relevance with prescriptive approach. Since its creation in 1950s, the EU witnessed a prescriptive approach, which focused on providing in some cases OHS technical standards directly and in many more cases mandating the Member States to provide technical standards (Liu, 2015). The prescriptive approach was dominant until the introduction of the Framework Directive 89/391, (Liu, 2015), which was influenced by the UK's Health and Safety at Work etc Act 1974. The latter adopted goal-oriented elements recommended by *the Robens Report*. One prominent character of the Chinese legislation is of large number of prescriptive provisions. The difference is that the EU traditionally took use of the prescriptive approach, while China still utilizes it.

Third, both jurisdictions have endorsed some commonly accepted principles and underpinning values that govern the protection and promotions of OHS. These principles and values include the realization of the imposition of the OHS obligation primarily on the employer, the establishment of specialized public agency to enforce OHS laws, and the realization of adopting a comprehensive legislative system to battle occupational hazards. Although the EU and China show different attitudes toward the way of formulating the provisions in their respective legislation systems, both of their approaches indicate an attempt to realize the requirements of securing a healthy and safe workplace.

Fourth, both jurisdictions are of political will at the central level. Even at its creation, the EU saw OHS as an essential area to regulate and an area of relevance with the community's integration. The development of EU OHS also implies that OHS has been one of the few social domains, which remain highly centralized. (Liu, 2015). In this context, it is arguable that EU is of great political will to regulate the OHS. Protecting workers against occupational hazards is highly of interests of a socialist country as China. This is already stipulated as in the supreme law, the Chinese Constitution. In different congress meetings and state council meetings, preventing occupational accidents and "securing the safety of labors' lives and property" have been addressed. In this context, China is never short of political will at least at the central level to protect and promote OHS, although there has been a lack of driving force --- including factors of different aspects (the legal aspect is a well-functioning legal system) --- which would turn political will into effective OHS management.

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Fifth, OHS regulating in the EU and China faces some common challenges. The emerging potential OHS hazards introduced by new technologies, materials, and substances, have threatened OHS regulating. Although psychological and psychosocial problems are becoming dominant occupational risks, both of the two systems have not recognized these hazards in their legislations. However, it should be noted that some EU Member States, for example, Sweden, the Netherlands, France, UK, Germany, and Austria, among other things, have already statutorily recognized these risks as workplace hazards, and moreover there are academic speculations that the EU law would in the not far further recognize these risk as workplace hazards. The EU's trend at this point would be further discussed in the following part.

Divergence

Despite the converging features between the EU and China, the legislation and the adopted approaches in the two jurisdictions present different answers to the research questions formulated in Chapter 1. hese differences include the role of worker participation, the regulating mental health at workplaces, the attitude towards the psychological and psychosocial problems at the enforcement level.

Economic Interests May Not Endanger the Health of an Employee

As a developing country as China, would the economic growth inevitably a priority in the social-economic context. However, this is also presented in the legal wording of OHS regulations, including the two primary legislations, the Safety Work Law and the Occupational Disease Prevention Law. In comparison, this is not observed in the OHS legislations at both the EU level and the Member States level. According to Barnard's analysis, the EU bases its OHS legislative activities also partly on the economic concerns: one of the main economic justification is to create "a level playing field", by depriving those countries with low OHS standards of a perceived competitive advantage over those countries with higher standards and thus greater costs (Barnard, 2013). Nevertheless, in no case would the OHS legislations be enacted for promoting economic growth, and would the economic growth be expressly provided as the legislative purpose. Also, through the examinations of the Member States' national laws, which should be at least theoretically in line with the EU legislations, no wording relating economic growth promoting is found. The rationale behind is simply because the OHS law is of nature social law. It cannot protect the workers' OHS rights, while promoting the economy, as the two issues are in industrial practice contradictory to each other, and could not be made at the same time. As stated in the *1974 Council Resolution on Social Action Programme*, which sees OHS law as a measure aimed at the humanization of the workers' living and working conditions with particular reference to improvement in health and safety conditions at work.

The System: Unified vs. Separated

The EU legislative system is built based on an integrated approach, reflected in its integrated framework Directive 89/391. This legislative system deals with both the OH and OS. Correspondingly, the transposed legislations in Member States are of unified nature and deals with both the OH and OS. This involves a basic framework of primary legislation establishing general principles and some specific requirements (Barnard, 2013). Examples include the Denmark's *Working Environment Act 1975*; Greece's *Health and Safety of Workers' Act 1985*; Ireland's *Safety, Health and Welfare at Work Act 1989*; the Netherlands' *Working Environment Act 1980*; and UK's *Health and Safety at Work Act 1974* (Barnard, 2013). It is

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also the case with their respective enforcement systems, which are also integrated and responsible for implementing the whole OHS laws and securing the compliance by inter alia the employers.

OHS issues are dealt with in a different way in China. The legislative framework is statutorily divvied into OH and OS systems, respectively headed by two basic laws: the Occupational Disease Prevention Law and the Safe Production Law. Under this legislative framework, the supervision system is correspondingly separated, and mainly include health administrative department and work safety administrative department. And, these two regulatory departments are both authorized by laws and respectively assume their duties and responsibilities.

Both Chinese scholars and scholars from outside have different opinions vis-à-vis whether the Chinese system is adaptive and elastic enough to meet current and future challenges. Zhou holds that the OH enforcement power distribution to the health department is not in line with the need of actual development of OH, and the objective administrative system in China. (Zhou, 2010). Instead, the primary OH enforcement responsibility should be distributed to safety administration. Only OH issues relating to the occupational disease treatment, and rehabilitation would be left to the health department as the health system, in his view, possesses sufficient expertise and resources for the above issues (Zhou, 2010). Li and Zhang argue that separation approach in OHS has caused contradictions and overlaps in two parallel legislative systems (Li & Zhang, 2012). Bingan Li thinks the separated legislative framework has caused unnecessarily rising size of the OHS standards as different administrative departments are empowered according to the legislative framework to promulgate standards within their respective jurisdictions (Li, 2013).

From the enforcement perspective, Zong et al hold the view that the segregation in the OHS system has caused has caused the unnecessary rise of the cost of enforcement, as well as the cost arising from compliance with laws on the part of the employers (Zong. et al., 2011). This viewpoint is also shared in: Zhang et al.'s research. (Zhang et al., 2010). From the OHS management perspective, Wu and Chi points out that the separation of OH and OS may cause ineffective convergence of occupational hazards source management, early prevention, process management and consequences response (Wu & Chi, 2015). In the legal domain, the above mentioned ineffective convergence in the enforcement of occupational health and safety laws may weaken the supervision capacities. Furthermore, they point out that the lack of harmonized legislation and unified supervision would result in the conflict of regulatory departments' function and poor coordination (Wu & Chi, 2015).

Based on the above opinions, it is arguable that the lack of harmonized legislation and unified supervision has caused to some extent the conflict of regulatory departments' function and poor coordination, and also from the compliance perspective, the ineffective convergence of occupational hazards source management, early prevention, process management and consequences response.

General Obligation Approach

Although the regulating OHS by the EU/EC started as early as its creation, the approach that was adopted was based on binding normative instruments with the aim of standardizing national laws, and this technique was widely used until the 1990s (de la Vega, 2013). Since the 1989 Directive 89/391, the general obligation approach has been put in place, together with greater use of soft law instruments. In the EU system, general obligation, the general obligation provisions have all been introduced to ensure that the principal parties involved (primarily the employer, and to a less extent, the employee, and other parties) in all work processes are subjected to a range of overlapping and interlocking duties requiring

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them to ensure the workplace is safe and without risks to health. Under the general obligation approach, both employers and employees have specific statutory obligations in relation to workplace health and safety that must be followed. This is combined with the greater role of private individuals (workers and/or their representing bodies) in the drafting of the workplace instruments (de la Vega, 2013). Moreover, this ideal of general obligation may not be easily achieved without the EU's desire for risk assessment. As a matter of fact, the EU puts risk assessment as one of the primary means underpinning the general obligation approach. In this sense, it is seen as the key method in self-regulation, and is presented as one of the crucial means in order to avoid occupational accidents.

The general obligation approach can hardly be found in the Chinese system. The present legal provisions are mainly detailed, restrictive and prescriptive, specifying the minimum standards that the employers should comply. The minimum standards are mostly prescriptive technical requirement of the production activities, such as scaffolding safety, prevention of falls, etc. Most standards for health and safety are compulsory. This sharp difference with the EU system is because the Chinese regulations and standards are based on the perspective approach rather than general obligation approach. The prescriptive approach is also called "deemed to comply" or "command and control". The Chinese legislation under this approach is, as opposed to ends, primarily concerned with type and quality of materials, method of manufacturing, and workmanship. The system attempts to standardize the work process using prescriptive rules and procedures usually backed by the monitoring of compliance and by sanctions for non-compliance. In parallel, due to absence of general obligation, the Chinese system fails (also does not need) to adopt risk assessment mechanism.

The Role of Occupational Insurance

Although the EU legislative system does not include providing occupational insurance as mandatory requirement, all the Member States have mandated so in their national legislations, although the differences in doing so are found. The legislations of in some EU countries have included workplace insurance as integral part of "social security health insurance schemes", and those of the other countries have prescribed a separate insurance scheme specific for OHS. In the first case, if a work-related illness, or an occupational accident injury occurs, the rules on sickness apply. Many of the legislations of the Member States include the occupational insurance in the mandatory health insurance, for example, the Netherlands, Sweden and UK; the others in the social security scheme. Despite the differences, one character at least is common. That is

In the three countries, which are chosen for study in this research, if the workers think there is a gap between the amount they are compensated by the occupational insurance scheme and that they expect, they can go to court to seek extra compensation to fill the gap. It should be kept in mind that the frequency of going to court varies among the three countries. In the Netherlands, and Sweden, as discussed before, it is very rare that workers start the procedures by themselves. Instead, the trade unions will do this on their behalf.

In comparison, the occupational accident insurance scheme commenced implementation as late as in 2004. China fails to run a mandatory universal health insurance system, as the legislative framework has itself limits in relation to the coverage of employees and the nature of injury. According to the current Chinese system regulating the insurance, the most fundamental requirement for the employee is to prove they have or had a labour relationship with the employer at the time of the accident or onset of illness. In this context, the employer is reluctant to sign written labour contract, which would become the most

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obvious proof for the existence of the labour relationship in order to not avoid providing the insurance for the workers, for the reason that the insurance is financed by employer-paid.

According to a 2010 published literature, in the Delta River industry area, only 65 percent of the workers had labour contracts and only 73 percent had work injury insurance (Brown, 2010). For those who are not covered by occupational insurance, have to seek compensation by "unusual means", such as attracting public social media's attention, which is reflected in the case of Tseng Hei-tao (Liu, 2013).

The Role of Moral Harassment

At the union level, the Community has until now not adopted special legislation vis-à-vis moral harassment (Liu, 2015). As discussed before, the Framework Directive fails to include moral harassment as workplace hazards. However, it does require employers to 'adapt the work to the individual, especially as regards the design of work places, the choice of work equipment and the choice of working and production methods, with a view, in particular, to alleviating monotonous work and work at a predetermined work-rate, developing a coherent overall prevention policy which covers technology, organization of work, working conditions, social relationships and the influence of factors related to the working environment'. In this sense, there is a reference to, and provision for, risks related to the psychosocial work environment. Also, the European legislators have taken use of policy approaches - to define moral harassment as a violation of dignity, as well as to combine sexual and gender harassment with "mobbing," and bullying of all workers (Liu, 2015). Furthermore, according to the compilation by Martino et al., the European Parliament's 'Resolution on Harassment at the Workplace 2001/2339 (INI)'includes the following:

calls on the Member States, with a view to counteracting bullying and sexual harassment at work, to review and, if appropriate, to supplement their existing legislation and to review and standardize the definition of bullying;

urges the Commission to consider a clarification or extension of the scope of the framework directive on health and safety at work or, alternatively, the drafting of a new framework directive as a legal instrument to combat bullying and as a means of ensuring respect for the worker's human dignity, privacy and integrity; emphasizes in this connection the importance of systematic work on health and safety and of preventive action;

In this context, although without specifying what form it should take, the EU commission recognizes that psychological harassment and violence at work require legislative action (International Labour Organization, 2004).

At the member state level, countries such as UK, Sweden, the Netherlands, Belgium, Germany, Austria, Spain, Luxemburg, and France have developed specific legal regimes to expressly protect in their laws the workers from harassment at work. In Member States like Greece, there is still no specific legislation to combat the phenomenon. However, the victims can be fully protected by the institutional anti-discrimination law (Vlagopoulou, 2017). According to EU's report, as of 2004, as many as twenty three then Member States (Austria, Belgium, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, Italy, Lithuania, Luxembourg Malta, the Netherlands, Poland, Portugal, the Slovak Republic, Slovenia, Spain, Sweden and the UK) stated that they had employment legislation that dealt with Sexual Harassment/Harassment based on sex (McGolgan, 2004).

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In contrast, moral harassment is until the day of writing never considered an occupational hazard in China (Liu, 2015). China has adopted a legal system against this concern based on not specific OHS moral harassment provisions, but instead provisions of other non-OHS laws, including mainly the right to reputation provisions in General Principles of Civil Law (Article 101) and in the Penal Code (Article 246). Moreover, in this system, the scope of moral harassment is much narrow, compared to that in the EU Member States' system, as it is largely limited to including no much more than sexual harassment.

The Quality of Law Enforcement

Rule of law constitutes one of the EU's essential elements and good governance. The EU has a good reputation in terms of the rule of law, the law is generally enforced to a satisfactory level in the EU Member States, particularly in the "old members". It should be noted that there is a noted imbalance existing within EU regarding this issue, because the *status quo* in the "new members" --- the Member States ascended since 2004 --- is basically not equitably at a high level as in the old members. Nonetheless, generally, in combination with that the EU strengthens the protection of the rule of law and fundamental rights in the EU, the non-compliance with the law is not commonly observed in the Community.

In comparison, although the situation is continuously improving, there is a well-known gap between the 'law in books' and the 'law inaction' in China (Li, 2014). That is so called in Chinese "laws are not well executed or strictly executed although they are well enacted"(有法不依,执法不严). To develop the economy, local governments tend to avoid strengthen the inspection and control to compel the employer's compliance with laws, in order to make way for promoting economic growth. This problem is closely related to and aggravated by the problem mentioned in the section 3.2.1 in this chapter. That is, economic growth is statutorily recognized that as a priority.

The Role of Workers' Representing Bodies

In Europe, civil society has been traditionally playing a vital role in promoting the whole society's advancement. This role has begun to play even before it was recognized by legislations. It is also the case with the worker's representing bodies which play a vital role in the OHS enforcement system. Public awareness of occupational protection has been raised by constant social movements, including the early working class movements of the late 19th century and, to add a further dimension to this, the modern social movement beginning in the 1970s when the number of work-related accidents and illnesses remained high, after twenty years from the launch of the fundamental freedoms of movement (de la Vega, 2013).Nowadays, it is argued that a prominent feature of the EU model is its emphasis on encouraging civil society to participate in the development, implementation, and enforcement of OHS policy, as demonstrated in the employer-employee cooperation approach in its system. In other words, the EU system relies not exclusively on a centralized state inspectorate to enforce OHS laws, by supplementing the inspectorates with mandated workplace OHS committees. There committees, though bearing different titles in different Member States, generally operate with delegated public powers, including for example the monitor, and in some measure, are empowered to enforce, compliance with the regulatory regime.

In contrast, the awakening of public awareness of the OHS protection in China occurred later, especially after the occurrence of serious occupational accidents or outbreaks of occupational diseases. Nevertheless, public awareness of OHS protection remains at still a considerably low level. In a largely Party-state country as China (Yu, 2007), civil society (i.e., individuals and organizations that are outside

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the governmental apparatus) is seen as being "relatively underdeveloped" (Percival, 2013; Nicholas, 2012; Yu, 2007). Trade union system is basically of half-official status, and not granted independent position. The relationship between the Chinese trade union system, and the communist party and the state is seen in the research by Hishida et al. (Hishida et al., 2010)

At the workplace level, trade union is not empowered to be actively involved in OHS, neither is any other form of worker's representing body, if any. Therefore, the role of workers' representing bodies in participating in OHS is not observed in China in the same way that it is in the EU.

Variables

OHS is never merely a separate material sphere; instead, they are interconnected with their surroundings and enmeshed in social-economic and legal contexts. Having observed the divergences between the EU and China regarding OHS legislation and practice, this section identifies several variables in the contexts that may explain the divergences found above.

OHS Policy-Making in Social-Economic Contexts

Although both jurisdictions have conducted intensive OHS policy-making, their starting points differ significantly. In a post-developed society as the EU, OHS protection is deemed as an intrinsic component of civic life and a crucial means of achieving public welfare of not only the workers but also the whole society members. OHS protection is firmly grounded as a fundamental purpose of the industries, whereas the economic growth is considered a by-product, at least secondary to the public welfare.

In comparison, in China, the social-economic contexts in which OHS is situated are, however, not similarly opportunistic and poetic. Instead, the GDP-based assessment model of local officials' performance pushes these officials to expressly or implicitly allow the employer enterprises in their jurisdictions to bypass OHS requirements to reduce production costs and in some cases even help the employers avoiding potential compensation liabilities to injured or ill workers. For example, see case Tseng Hei-tao (Liu, 2013).

Compared to the OHS protection in EU, this issue in this East Asian country is seen as being more pressured. Well-documented factors include the increasingly expanding size of industries, the large working population, a comparatively poor economic basis and the comparative poverty. The following statistics may be illustrative: The size of China's GDP is exceeding10 trillion USD as of 2014. China processes 21% of the world's population, and around 400 million workers. The China government has until the day of writing never published statistics over the total number of the workers. So, it is made reference here to the statitiscs by China Labour Bulletin, a Non-Government Organization with high credibility. (China Labour Bulletin, 2017).

The annual GDP growth rate, though decelerating since 2012, has been on average nearly 10% in the past three decades (International Monetary Fund, 2017; World Bank, 2017). China has achieved a rapid economic development, especially in industrial field. China has become the world's largest manufacturer, with its manufacturing output surpassed the U.S. and Japan (Wu & Chi, 2015). Despite their benefits, the expanding industries have been increasingly put the workplace at risk and hazards to human health arise. In this context, China is facing unprecedented pressure with regard to OHS protection.

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Operation of Administrative Power and Public Trust in General

Although reforms have been initiated in recent years aimed at the transformation to a limited government, China has a long history of an omnipotent government (Fan. et al., 2014; Morgan. et al., 2010). Lacking a separation of powers, the government historically served the administrative as well as the judicial functions (Morgan. et al., 2010).

In China, however, multiple factors impede the exercise of administrative power in an accountable way, including the absence of laws specifying procedural rules governing the administrative power exercise, a lack of channels through which citizens may seek to enforce the rights given to them by law, and a lack of public participation and transparency. The impediments are elaborated in a more detailed way in the research by Ostry et al. (Ostry. et al., 2003). In this context, the government can freely, though to a varying extent from region to region, switch between roles as the exerciser and the supervisor of power, which creates room for rent seeking.

Judicial Independence and the Predicament of the Courts

Indeed, the state of judicial independence in China remains elusive (Michelson & Li, 2012; Peerenboom, 2010; Kinkel & Hurst, 2011). Yet, Michelson and Li argue that most scholars agree that the Chinese legal system remains fundamentally fused to the state bureaucracy and subject to some important measure of political interference and control (Michelson & Li, 2012). This is also the case for OHS-related cases in China. In contrast, this deferential attitude does not derive from judicial respect for agencies' professional knowledge under the rationale of rule of law, as it is in the EU. In the Chinese system, this attitude derives from the courts' comparatively inferior role in terms of administrative power (Peerenboom, 2010). As a result, the courts are supposed to work in tandem with governments for the purposes of policy advocacy and social control.

Inappropriate interference in judicial work by governments has led to a phenomenon in which local courts are not willing to handle cases against where governments explicitly or implicitly protect the enterprise because of economic development concerns and do not have the ability to adjudicate such cases neutrally and independently (Liu, 2013). The predicaments and impediments that courts confront in China are not found in the EU, where the rule of law and independency of courts are well respected (Sadurski. et al., 2006).

Assessment of Contexts: Understanding the Transition in China

Having analyzed the convergences, divergences and variables between the EU and China, the next question will address how to assess these contextual similarities and disparities to better understand the distinctive features of the current transition in China.

Since 1978, China has stunned the world with its one of the world's biggest economic booms. The Chinese economic miracle closely relates to the development model to which China adheres (Ma, 2015). However, the "China model" has, in the recent years, received more criticism on inter alia democratic representation, and human rights issues (Chang, 2014) and the cost is seen as huge and unsustainable (Huang, 2008). In the OHS field, this cost would be that economic growth also increases occupational risks without inter alia enough increasing legal protection (Zhao. et al., 2012).

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Examining the EU's OHS policies, one can observe a clear shift in the late 1980s. Before that, the prescriptive approach to rule-making, with focus on specification standards, intensively shaped the landscape of the EU's legislations. However, the following shift in regulating OHS signaled an awareness of fundamental problems akin to the prescriptive approach, when it comes to prevention of workplace accidents.

In comparison, China began to introduce reforms in the late 1970s with the end of the Cultural Revolution, which had brought about immeasurable economic losses and social turbulence to the China. Since then, China has made economic growth its main priority (Dorn & Wang, 1990). This priority was also echoed by massive grass-rooted people; they were desperately in desire of improving their livelihoods and quality of life. In parallel, the economic growth priority is systematically established in the Chinese administrative system, where economic growth performance has significant impact on the promotion prospects in the local officials promotion tournament (Wang, 2007; Cao, 2006). In the other words, the whole Chinese society from both the government and the civil society are to some extent "kidnapped" by the imperative of economic growth for the preservation of political stability. In this sense, OHS regulating should be considered not only as a material entity but also as a basis for economic growth and furthermore as a basis for the sovereignty's legitimacy.

Nonetheless, with society becoming increasingly pluralized and workers beginning to desire a better quality of life and a better workplace, economic growth cannot completely sustain the legitimacy challenge in the new era. The derogation of the workplace health and safety and the occurrence of the industrial accidents, and the prevalence of the occupational diseases are occurring at an alarming rate. In order to alleviate the social conflicts and smooth China's transition, the authority has revitalized and employed traditional values and ideologies. The most recent one is 'harmonious society' brought forward in 2004 as the governing ideologies for contemporary China (Guo & Guo, 2008; Zhao & Lim, 2010; Ma, 2015). Yet, it can be asserted that harmony may only be a mirage as long as it is built on the current OHS regulating model. In this context, making a commitment to workplace health and safety and delivering on its promise before it is too late might be the foremost priority for furthering the unavoidable transition process in China.

CONCLUSION

Through the compression observation between the Chinese system and the EU system, this section will conclude what conditions would be reached in order to establish an effective OHS legal system. The results arising from this section would be the basis for proving legal and policy recommendations for improving the Chinese system.

General Obligation Approach Plays a Vital Role in Improving the Effectiveness of OHS Law

First, general obligation approach can bring down the size of the OHS laws as shown in the EU OHS system part. The causes of workplace incidents are typically complex and may involve a series of events, which are of varying probabilities. Under the prescriptive approach, to cover the situations as many as possible, a regulator has write rules or standards as many as possible, correspondingly. However, with the introduction of general obligation, the regulator does not need to provide rules to cover all the situ-

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ations (which is also impossible to achieve). Instead, the regulator only need to mandate the general obligation applicable to parties (primarily the employer) in all workplaces.

Second, the operation of modern businesses involves the use of sophisticated management and technical systems. It is unlikely that a regulator, no matter how well versed he or she may be in the businesses, will possess sufficient knowledge to be able to write and enforce regulations that keep up with all of the latest technical developments. However, under the general obligation approach, the general obligation would be the primary line to check whether the employer and the other parties have complied the law, and as such simplify the process of formulating the law and enforcing the law, as repeatedly shown in the EU part, the Sweden part, the Netherlands part, and the UK part.

Third, there is no means of designing or operating to a calculated level of risk. Even if it could be shown that the use of a different type of ladder is of very low risk, for example the OHS rule has to be followed. In this context, the prescriptive approach is very labor intensive and costly both to the regulator and the regulated industry and can be cumbersome for mature industries, as shown in the Chinese system part. The general obligation approach allows for the overlaps of accountability. It mandates all the employers have a duty to identify hazards, assess risks, and eliminate or control risks to the OHS of the workers. Given the resource restraints, it can be useful for organizations to prioritize risks and plan their actions so that they can make their workplaces healthier and safer.

A Harmonized OHS Legal System

A harmonized system would regulate OHS more effectively and protect workers against workplace hazards more efficiently. First, the harmonized legislative system would lead to a harmonized enforcement system. As demonstrated in the EU system, the EU and its Member States (for example, the three countries chosen in this research) have adopted a harmonized law, dealing with both health and safety, and correspondingly, the Member States have established a harmonized enforcement system to implement the laws. In contrary, separated legislative system would lead to separated enforcement system, as is presented in the Chinese system part. That the statutory protection of OH and OS, which are presented in two important existing laws: Production Safety Law and the Occupational Disease Prevention Law, two enforcement systems are responsible for implementing the two laws respectively.

Second, a harmonized system helps to avoid public agencies' function conflicts and unnecessary confusions to the employers. As a matter of fact, the OH and OS are closely related, which cannot be artificially separated, and both of them are serving the workers' safety and health. The Chinese approach to separate the two parts results in the conflict of regulatory departments' function and poor coordination. This further lead to that the enterprises sometimes would confuse that which department assumes regulatory function. Like in the China's case, regarding the supervisory power distribution between the work safety department and the health department has caused confusions to the employers. In parallel, the regulatory vacuum would be induced because of this status. However, a harmonized system would effectively avoid this problem because of the existence of only one legislative system and one supervision system.

Third, at the enterprise level, a harmonized system can protect workers better. According to Wu and Chi, the separation of occupational health and occupational safety in China has in fact caused to the employers the ineffective convergence of occupational hazards source management, early prevention, process management and consequences response (Wu & Chi, 2015). The ineffective convergence at the enterprise level in turn leads to degrading the actual protection level the employer could provide for the

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workers (Wu & Chi, 2015). In contrast, a harmonized system would effectively avoid the above situation by ensuring the uniformity and consistency of hazards source management, early prevention, process management and consequences response, and ultimately helps the employer provide a satisfactory level of protection.

Workers Actively Contribution to Health and Safety Workplaces Can Lead to a Lower Occupational Risk Level and Accident Rates

The previous discussion has shown that a resolution to the effectively promoting workplace OHS is not as simple as ensuring the law compliance while according the public inspectorate more powers or vice versa. In contrast to the traditional focus on command-and-control as presented in the Chinese system, and in the before-1980s EU system, the regulation of OHS activities necessitates: a more delicate balance between the state and the workplace, and the employer and the employee; and a deeper quest for the cooperation at the workplace level.

Previous studies have shown that the prevalence of the command-and-control would eliminates the link between thinking and doing: at the country level, the government thinks- the workplace parties do, and at the enterprise level, the management thinks - workers do, and lead to that employees and unions are kept at arm's length from decision making because their interests are assumed to be limited to achieving higher pay and benefits. This is not in line with the fact that the employer does not have the solutions to all health and safety problems, while workers and their representatives have the detailed knowledge and experience of how the job is done and how it affects them (European Agency for Safety and Health at Work, 2012). Workplaces in which workers actively contribute to health and safety often have a lower occupational risk level and accident rates (European Agency for Safety and Health at Work, 2012). According to the previous studies, this is also witnessed in the European system. Some countries as Sweden and the Netherlands have begun to promote workers' participation in OHS as early as the end of WWII. At the EU level, since the shift, the countries witness a growth in worker's participation, although in the country as the Netherlands it might be also partly caused by the labour inspectorate being understaffing (Jaspers & Pennings, 2013). The need to promote worker involvement in OHS is widely accepted not only at the EU level, but also at international level (see International Labour Organization Convention concerning Occupational Safety and Health and the Working Environment, No 155 of 1981).

The participatory mechanisms usually provide for the workers and/or the workers presenting bodies (in most cases, in the form of OHS delegates and OHS committees) the right to be consulted when any changes to the workplace affect, and the right to (together with the employer) produce agreements, and other forms of supporting documentation produced that regulate the workplaces. This documentation may even create mandatory rights and obligations as long as it is empowered by the statutory laws. For example, as shown in the Netherlands case, the agreements can deal with workplace moral harassment issues.

In this sense, promoting workers' participation can be a powerful tool to improve the existing OHS system to be adaptive enough to workplace needs, effective to combat against OHS hazards, and stable enough to accommodate diversified workplace interests and claims.

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The Key to Sufficiently Compensate the Occupationally Injured or Ill Workers Rests in Occupational Insurance

Priz brothers note that the occupational insurance is by nature a crafted "historic compromise" and "the compromise established that the liability of an employer towards workers who were injured or made ill on the job was essentially no-fault" (Priz & Priz, 2010). They further point out the workers receive, through the insurance mechanism, the compensation for their medical costs and lost wages (Priz & Priz, 2010). Prior to the introduction of this solution, injured and/or ill workers had to take legal action based on tort system against their employers for compensation, which created a system where workers found it difficult, costly and time-consuming to get compensated for the costs of occupational injury and illness (Priz & Priz, 2010).

In this sense, the divergences between the EU and China in terms of occupational insurance indicate gap between the two jurisdictions in compensating the workers, in cases that they are injured and/or become ill. The Chinese system fails to establish a comprehensive insurance system. As commented by Larson and Larson, the right to compensation benefits depends on one simple factor: the existence a work-connected injury and/or illness. (Larson & Larson, 2008). However, a mere elevation of the emphasis on the occupational insurance in name, such as dictation of the legal wording that a universal occupational insurance be established, does not necessarily increase the capacities of the insurance scheme. Instead, corresponding measures must be taken to improve the general context in which a particular institution is situated.

First, desirable effective scheme needs to be built on the premise that the employers are financially motivated to provide the employees the insurance. The current scheme that put the premiums paying liability completely on the employer would definitely reduce the employer's motivation as the employers might become financially overburdened. It is also not fair if this responsibility is shifted to the employee. Given the general situation that China has a rich government and a poor working class. (The Economist, 2015; Zhou, 2010; Wang & Zheng, 2013). In this context, a practical solution might be the government provides subsidies for the insurance premiums. As a consequence, the law should impose a statutory a subsidy-providing responsibility on the employer. Second, the various involving parties should be accorded the powers in case insurance is not provided. This means that the labour inspectorate, employers, employees and/or their representing bodies need to be equipped with their respective institutional functions. Particularly, the trade union should be accord sufficient powers to compel the employer provide sufficient insurance.

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KEY TERMS AND DEFINITIONS

Convergence: A similarity between different legal systems.

Divergence: A difference between different legal systems.

Ergonomical Risks: The aspects of a job or task that impose a biomechanical stress on the worker.

General Obligation: An occupational health and safety law approach that focus more on imposing obligations of general nature rather than providing prescriptive rules.

Moral Harassment at Workplace: Vexatious behavior that manifests itself in the form of conduct, verbal comments, actions, or gestures at the work environment.

Occupational Health and Safety: A multidisciplinary field concerned with the safety, health, and welfare of people at work.

Psychosocial Risks: The aspects of a job or task that impose psychosocial harm to working population.

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Chapter 52
Gender Awareness and Women Managers in Tourism:
Perceptions of Inequality and What Could Be Done

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ABSTRACT

The purpose of this chapter is to reveal women top-level managers' gender awareness in relation to two aspects: 1) perceptions of discrimination and 2) views of what could be done towards gender equality (by the state, organizations, and women themselves), so that more women can advance their careers. Women top-level managers in the Portuguese tourism sector were interviewed. The interview data suggests that discrimination might still be pervasive in the Portuguese tourism industry. However, many women do not perceive it as "real" discrimination and have contradictory discourses about it. Informants were also asked what could be done so that more women advance in their careers. They place the solution to the problem of gender equality mostly in women's hands. While some of the strategies proposed by women confront the gender order, others align with the status quo by ensuring that women "fit in" without challenging existing structures.

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INTRODUCTION

The increasing participation of women in employment was the most radical change in the labor market over the last century. Although female employment was initially the result of a need to complement family earnings, it slowly became a crucial part of women's identity (Goldin, 2006). Nowadays, women's involvement in the labor market seems to be irreversible (Casaca, 2010).

Although a lot has been accomplished in the field of gender equality, the pace of change has been slow and equality *de facto* is still far from being achieved. This reflects the gender order which permeates all spheres of society including labor. Several inequalities remain in this field. Work is still horizontally and vertically segregated, the gender pay gap remains and women's jobs tend to hold lower quality (Collinson & Hearn, 2005; García-Pozo, Campos-Soria, & Sánchez-Ollero, 2015; Santero-Sanchez, Segovia-Pérez, Castro-Nuñez, Figueroa-Domecq, & Talón-Ballestero, 2015; Scott, Crompton, & Lyonette, 2010). The traditional ideology of domesticity persists, and women are normatively assigned the work of caring and nurturing (Scott et al., 2010a).

Such gender stereotypes and cultural barriers work particularly against women with management aspirations. They are frequently stereotyped as weaker and less committed to long-term careers than their male counterparts (Brownell & Walsh, 2008; Li & Leung, 2001). As a result, they often feel that they have to work harder than men in order to prove themselves and avoid being sidelined. Several studies have revealed that despite the centrality of male practices and behaviors that lie at the core of most organizations, management is often perceived as 'gender neutral' (Acker, 1998; Mavin, Bryans, & Waring, 2014).

Management and organizations are often perceived as 'gender neutral' by women themselves. Several studies have revealed that women managers may downplay the role of discrimination (Clark, Caffarella, & Ingram, 1999; Kantola, 2008; Wahl, 1992). When carrying out a broader study on gender, discrimination and the tourism sector (Anonymized), the authors of the present study observed the same pattern, since their respondents – women managers – also tended to downplay the role of discrimination. This aspect revealed a certain lack of gender awareness, which was also noticeable in women's suggestions of how to make the tourism sector more gender equal. Hence, the present article not only analyzes women managers' discourses on discrimination, as previous studies did, but it goes beyond that, by analyzing with a gender lens women's suggestions of how gender equality could be achieved.

On a global scale, tourism is a highly gendered sector (S Mooney & Ryan, 2009; Segovia-Pérez, Figueroa-Domecq, Fuentes-Moraleda, & Muñoz-Mazón, 2018). However, it is frequently conceived as an industry that "opens doors to women", since women comprise the majority of its workers in most countries (UNWTO, 2011; WTTC, 2013). Therefore, it is relevant to study gender awareness in the tourism sector.

Portugal was chosen as the setting for this study, partly due to the importance of tourism for the Portuguese economy. Besides, Portugal is a country whose high levels of female participation in paid employment (which are among the highest in the European Union) can be largely explained by an economic rationality, rather than by an effective change in traditional gender beliefs (Sackmann, 2002). Moreover, previous studies have revealed the genderedness of the tourism sector in Portugal (Carvalho, 2017; Costa et al., 2017). Therefore, it is of interest to investigate women managers' gender awareness in this context.

Hence, this study analyzes women top-level managers in tourism (hotels, travel agencies and tour operators) and their gender awareness. Women's gender awareness was analyzed in relation to two

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aspects: i) their perception of discrimination; and ii) their views of what could be done towards gender equality (by the state, organizations and women themselves). Women's discourses tend to reveal a lack of gender awareness. They also tend to overemphasize the role of individual career-making, while broader gendered structures are minimized in their discourses. underpinned by the invisibility of broader gendered structures.

Background

It is often stated that tourism offers many employment opportunities, particularly for women or ethnic minorities. Besides having a large employment multiplier effect, it has low entry barriers and offers opportunities for income-generating activities that can be conciliated with women's traditional gender roles and responsibilities in the household (UNWTO, 2011; WTTC, 2013). These characteristics of tourism employment generate some over-optimism about the potential of tourism for the integration of women in the economy (Gentry, 2007; Obadić & Marić, 2009).

Despite the optimism surrounding tourism employment, it may not necessarily confront the gender order, and may in some cases reinforce it. Connell (1987) uses the phrase 'gender order' to refer to 'a historically constructed pattern of power relations between women and men and definitions of femininity and masculinity' in the society as a whole' (p. 98-99). This gender stratification system legitimates women's subordinate positions in relation to men. Although gender differences (in contrast with sex differences) are socially constructed, they are used to reinforce the idea of 'essential' differences between women and men and thus 'naturalize' the gender order. All organizations also have a gender order that reflects the power balance between men and women. This gender order is related to the gender order of the society and cannot be separated from it, because both reproduce each other (Wahl & Holgersson, 2003).

Therefore, it is important to go beyond the argument that tourism opens doors to women, in order to analyze what kind of doors it opens, and how such labor opportunities challenge the gender order. In fact, over-optimistic arguments overlook the fact that tourism provides low pay, low status and low-skilled jobs in typically female occupations with few development opportunities (Adib & Guerrier, 2003; García-Pozo et al., 2015; S Mooney & Ryan, 2009; Santos & Varejão, 2007). Besides, due to the seasonality of tourist activity, tourism jobs often fail to provide workers with regular income the whole year. Due to their precarious nature, these jobs are also more likely to offer less employment rights (Purcell, 1997). Several studies have reported that there is a marked gender pay gap in the tourism industry that remains even after controlling for several variables, which is suggestive of pay discrimination (García-Pozo et al., 2015; Santos & Varejão, 2007). Hence, tourism labor may reinforce rather than challenge the existing gender order.

Tourism employment is also sharply segregated along gender lines. The typical gender pyramid is present in the tourism sector, and it is underpinned by traditional gender roles and sociocultural barriers. While men are over-represented in managerial positions, particularly in top-management, women are usually employed in typically female areas, or 'pink ghetto' jobs (Woods & Viehland, 2000), which are regarded as less skilled, and therefore have worse employment conditions and lower wages (Costa, Carvalho, & Breda, 2011; Jordan, 1997; Parrett, n.d.). Besides, the tourism industry tends to exploit perceived 'feminine' skills, and perpetuate traditional gender roles in sex-typed jobs such as cooking and cleaning (Purcell, 1997). Sexual harassment and sexual exploitation are also a common problem in the tourism sector. Female employees are required to look attractive and, in some cases, even flirt with

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customers (Gilbert, Guerrier, & Guy, 1998; E. J. Hall, 1993; Tsaur & Tang, 2013) because sexuality is sold as part of the tourism product. This reinforces gender power relations that can be potentially harmful.

Although women's representation in high-level positions has increased in the tourism industry, they are still underrepresented at the top. The main reasons that have been pointed out in the literature for women's underrepresentation in management have been old-boy networks, lack of mentor support, work-family conflict, hiring practices and gender discrimination, and the requirement for long working hours and geographic mobility (Boone et al., 2013; Li & Leung, 2001; S Mooney & Ryan, 2009; Ng & Pine, 2003).

In its usual definition, discrimination is seen as a 'singular' or 'exceptional' situation. It presupposes that it is visible and clear, and that there is someone, a specific individual, who discriminates against (Kantola, 2008; Wahl, 1992). It can be related with the gender pay gap, sex-segregated job advertising, verbal abuse, sexual harassment, sexist language, violence against women or violation (Benokraitis & Feagin, 1995). However, some authors contend that this definition of discrimination is too narrow, since it ignores behavior that may not be intentionally discriminatory or not perceived as such by the individuals doing the discriminating, while it may be perceived as offensive by the person being discriminated against. Besides, discrimination is not always visible or easy to pinpoint (Benokraitis & Feagin, 1995; Husu, 2001; Kantola, 2008; Wahl, 1992).

Several studies highlighted the importance of analyzing 'indirect' discrimination (Wahl, 1992), 'hidden' discrimination (Husu, 2001; Kantola, 2008), or 'subtle' and 'covert' discrimination (Benokraitis & Feagin, 1995). According to Wahl (1992), indirect discrimination is related to conditions in organizations and is more structural than personal. Indirect discrimination can be associated with a demand for long working hours, impossibility of taking career breaks or the existence work patterns that are adequate for most men but are discriminating for women (Wahl, 1992). Benokratis and Feagin (1995) distinguished between subtle and covert discrimination, which are hard to document, in opposition to overt discrimination. Covert sex discrimination concerns unequal and harmful treatment of women that is hidden, maliciously and consciously motivated, in order to ensure women's failure. In contrast, subtle sex discrimination is not conscious and may be unintentional. Although it is harmful, it is not usually perceived as 'real' discrimination' because certain behaviors are 'traditionally' acceptable (Benokraitis & Feagin, 1995). Husu (2001) combined subtle and covert discrimination into hidden discrimination. Several studies have concluded that while direct or overt discrimination has become less frequent, namely due to legislation prohibiting it, indirect or hidden discrimination is still pervasive (Bruschini & Puppin, 2004; Kantola, 2008; Wahl, 1992). Despite the pervasiveness of gender inequality and gender discrimination, some studies have revealed that women lack gender awareness and struggle to identify hidden discrimination (Clark et al., 1999; Kantola, 2008; Wahl, 1992). Kantola (2008), Wahl (1992), Oliveira et al. (2010) and Patterson et al. (2012a, 2012b) have shown that women tend to downplay the role of discrimination, deny the importance of gender and refrain from portraying themselves as 'victims'. However, these studies have unveiled how women's discourses are marked by contradictions, since they reveal situations that show how gender discrimination is still pervasive, despite their initial denial of gender.

The tourism industry is a sector particularly relevant for studying gender awareness and subtle forms of inequalities due its paradoxical characteristics, i.e. being simultaneously a feminized and gendered industry. Besides, although Portugal has remarkably high rates of female employment, economy has been the main motor for gender equality in the country, rather than a change in mentalities. Hence, it is a particularly relevant setting for the analysis of the research question proposed in this chapter.

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Female activity and employment rates in Portugal are among the highest in the European Union, particularly in full-time work (Casaca, 2010; Chagas Lopes & Perista, 2010). Moreover, Portugal has one of the highest rates of mothers of young children working full-time in Europe, despite the scarcity of childcare facilities and insufficiency of family networks (Plantenga & Remery, 2009; Torres, 2009). It can be said that economic rationality is the main motor behind women's integration in the Portuguese labor market, since an option and a necessity coexist (Cardoso, 1996; Sackmann, 2002). However, despite the legislation, the equality discourse and women's participation in employment, the traditional gender ideology persists, the gender division of labor at home is only slowly changing, inequalities in the labor market prevail and the gender pay gap is still far from being closed (Ferreira, 2010; Perista et al., 2016). Therefore, it is important to analyze what visions of gender equality persist in the Portuguese society, in particular to analyze the gender awareness of women managers in one of the most important sectors for the Portuguese economy – tourism.

GENDER AWARENESS IN PERCEPTIONS OF GENDER INEQUALITY AND VISIONS OF WHAT SHOULD CHANGE

The Study

This chapter reports results of a broader study on women managers in tourism. The broader mixed methods research study aimed to analyze to what extent gendering processes influence women's career and life paths (Anonymous). It combined the quantitative analysis of a dataset comprising all workers in the Portuguese private sector with the qualitative analysis of in-depth interviews to 24 women top-level managers in hotels, travel agencies and tour operators. Other articles were also published reflecting other partial results of this study (Anonymous). Both quantitative and qualitative results revealed gendered patterns of employment. In addition, qualitative results revealed the existence of a male culture in organizations, and persisting beliefs about women's lack of competence and availability (Anonymized).

In the present chapter, only qualitative data were used. The purpose of this chapter is to analyze women managers' perceptions of discrimination in tourism and their views about what could be done to tackle gender inequality and enable more women to advance in their careers. Table 1 provides an overview of the women managers interviewed in the qualitative part of the study. Informants were selected based on stratified purposeful sampling combined with snowball sampling. The purpose was to select information-rich cases and to capture major variations in the population. This sampling method sets limits to the generalization of the results to a broader population. The sample reflected the distribution of women managers across several categories of business dimensions according to the database used in the quantitative part. The semi-structured in-depth interviews were carried face-to-face and by Skype. In terms of data analysis, thematic analysis (Braun & Clarke, 2006) was combined with elements of narrative analysis (Czarniawska, 2004) in order to retain a sense of individual continuity across accounts. The software NVivo was used to sort the interview data into themes.

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Table 1. The sample

	Hotels	Travel businesses
Business size (workers)		
Micro (0-9)	3	6
Small (10-49)	3	2
Medium (50-249)	2	1
Large (250+)	5	2
Situation in employment		
Entrepreneurs	4	8
Employees	9	3
Age		
25-34	2	1
35-44	7	4
45-54	2	2
55-64	2	4
Marital status		
Single	3	1
Cohabitation	3	1
Married	4	6
Divorced	3	3
Children		
Adult children	2	3
Young children	6	6
None	3	2
No, but would like	2	0
Higher education		
Tourism	9	4
Outside tourism	2	5
None	2	2

Source: developed by the authors

Perceptions of Gender Inequality

Figure 1 summarizes informants' experiences and perceptions of discrimination in the tourism industry. Research participants were not only asked about discriminatory situations that they experienced, but also about their perceptions of gender-based discrimination in the tourism industry.

Five research participants reported experiencing situations of overt and hidden discrimination, while ten experienced hidden discrimination (Figure 1). Hence, almost two thirds of the participants were discriminated against on the basis of gender. While at first some of these interviewees seemed to deny the importance of gender, as the interview unfolded, they acknowledged situations of hidden discrimination,

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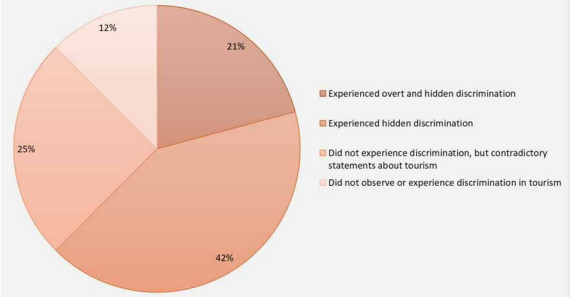
which they, however, refrained from labelling as discriminatory. In order to make hidden discrimination more visible, women were asked whether they had felt ignored, less visible, excluded or treated differently in their organizations for being women. Women's discourses were contradictory since, in some instances, they denied the importance of gender, but some statements revealed that they recognized the importance of gender or that they were treated differently.

Figure 1. Women's experiences and perceptions of discriminations in the tourism sector
Source: developed by the author



Only three women consistently denied having felt or observed any sort of discrimination (Figure 1). They did not describe any discriminatory situations either in their organizational settings or in the tourism sector more broadly. However, two of these women considered that women in general still do not have the same opportunities as men to exercise power, while one considered that opportunities are the same, *provided women prove their capability and availability.* Still, this is a contradictory statement. If women have to prove themselves in order to be regarded as equals and to deserve the same opportunities, then there is hardly gender equality from the start.

The remaining six women did not experience gender discrimination, but they either observed it in the tourism industry or their statements concerning what they observed in the tourism sector were contradictory (Figure 1).

It is relevant to analyze such contradictions. In fact, about half of all the informants contradicted themselves throughout the interview. They gave contradictory statements concerning both their experiences and their perceptions of discrimination and gender inequality in the tourism sector (Table 2):

Women's discourses about discrimination are filled with contradictions, since they rejected the existence of discrimination, while simultaneously recognizing situations where women received less favorable treatment. The same trend was also observed by Patterson et al. (2012b). The contradictory statements are mostly related with the paradoxical nature of tourism. On the one hand, informants stated that there is no discrimination in tourism because women are the majority, and certain (supposed) "feminine characteristics" are preferred in the sector; on the other hand, as the interviews unfolded, some of the informants recognized how the macho mentality was imbued in the sector, how women were not taken as seriously as men, and therefore had to make a greater effort than men and work twice as much if they wanted to advance in their careers. The denial of discrimination by some of these women and their contradictory statements revealed their lack of gender awareness. Most women only recognized the existence of inequalities when further probing questions were asked.

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Table 2. Research participants' contradictory statements on discrimination

Inter-viewees	Denial of discrimination or gender inequality	Perception or experience of discrimination or gender inequality
I01	Belief that the sector is more favorable for women because of their (supposedly) feminine characteristics.	Perception that a macho mentality prevails in the tourism sector, and as a result women's conditions in the tourism sector are not favorable.
I02	Perception that there are no gender inequalities in the tourism sector because women are the majority of the workforce.	Perception that working condition in the tourism sector are not favorable for women because of the existence of peak periods that demand availability and possibly generate work-family conflict, and that women end up being discriminated against for being less available.
I03	Belief that being a woman was positive for her as an entrepreneur and for her business.	Perception that, in many situations, employers prefer hiring men because they are more available.
I04	Denial of discrimination: she has never given others the opportunity to treat her differently.	Experience of discrimination in salaries and promotions at the beginning of her career; Perception that women are often excluded from sport events or informal outings ('Yes, this discrimination exists'); Perception that women need to be better than men in order to be recognized.
I05	Denial of experiencing exclusion, different treatment or lack of visibility for being a woman.	The realization that she had to be firmer in order to get recognition, that women managers still need to make greater efforts to assert themselves, and that women in managerial positions are still regarded in a less positive way.
I06	Denial of experiencing or witnessing gender discrimination in her current or previous organizations.	Witnessing supervisors selecting only the CVs from male job candidates. Perception of women's exclusion from informal outings (e.g. going for drinks), and of male clients' preference to do these activities with other men; Experience of sexual advances from clients during business dinners (as a consequence, she only has business lunches now).
I07	Denial of discrimination, exclusion, lack of visibility or recognition for being a woman.	Recognition that women need to make more efforts to be recognized; Male subordinates' refusal to follow her orders.
I08	Denial of discrimination.	Perception that men have more credibility for negotiating banking arrangements.
I09	Denial of different treatment by clients and suppliers.	Perception that clients often take her less seriously when she addresses them.
I10	Perception that the tourism sector is more favorable for women because there are many female entrepreneurs.	*In larger businesses, I see many men at the top, even in the travel agencies association, I see that at the top of that association there are practically only men… so I think that above a certain level there are more men.*
I11	Denial of experiencing discrimination; Belief that women create their own barriers and get lost in their emotionality; Refusal to consider that she is treated differently for being a woman.	Observation of pay discrimination (a female director in a different company earning a much lower salary than the previous male director); Perception that managers and employers prefer hiring men; Tendency not to take women as seriously as men in the tourism sector (in many countries, if a male director is hired, the company pays for his family's travel, but that it is not the case if it is a female director who is hired instead).

Source: developed by the author

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Interestingly, when the word 'discrimination' was not used in the questions asked, research participants were more likely to recognize the existence of structural constraints in the tourism industry. For example, when asked whether men and women have the same opportunities to exercise power, almost all interviewees answered negatively. The word 'prejudice' was consistently used in their discourses, while the word 'discrimination' was much less frequent, except in situations related with pregnancy or, in some cases, with female managers' comparatively lower salaries.

According to Patterson et al. (2012b), women deny discrimination because they do not want to portray themselves as victims. In the present study, these women regard themselves as highly professional, and it is possible that they tried to detach themselves from a victimizing discourse. They justify their advancement with basis on meritocracy and highlight the obstacles that successful women have to overcome individually in order to reach the top, in particular being capable of balancing outstanding professional achievements with the role of pillar of the family.

Views of What Should Change

Research participants were asked what could be done towards gender equality, so that more women reach the top of organizations. This section presents the main solutions proposed by the interviewees in terms of public policies, organizational measures and individual strategies, and whether the solutions proposed by women challenge or not the gender order. A more in-depth analysis of women's proposed solutions can be found in (Anonymized).

Women regarded the role of the state and organizations mostly in terms of provision of childcare (e.g. subsidies, childcare facilities) and flexible work arrangements (e.g. telework, less emphasis on working a fixed schedule, implementation of banks of hours), respectively. They believed it is crucial to provide women with the conditions to have more time to invest in their careers.

While some believed that the state could play a role in overcoming prejudice, mostly by setting an example, others were less optimistic that something at all could be made to speed up the pace of change. Most of them were against measures such as quotas for women in parliament. Some women were convinced that changes would occur 'naturally'. Despite recognizing that tourism is still a male world, some informants did not regard either discrimination in organizations as the root of the problem. Therefore, they do not think that it is tourism organizations that should change:

Travel agencies aren't different from other private companies, and to reach goals you need effort, and I don't think that it's companies that have to change.

In fact, the main way of dealing with gender prejudice and the *macho* mentality proposed by informants was through individual strategies – some of which undermine prejudice, while others ensure adaptation to the environment. Hence, interviewees considered individual strategies to be more important than institutional ones to overcome gender prejudice. Although the problem is not individual, they focused more on solutions at the individual level than at a more structural level. Many women literally said that the solution is 'in the hands of women':

Regardless of being a woman or a man, it's you who have to hold on to your job (…) and we should stop complaining all the time. You have to work, that's it.

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At the state level, I don't see which measures could be implemented… I think it's more at the individual level, women being prepared, having a good CV, showing that they can be as good as any man, that it's completely irrelevant being a man or a woman, what matters is professional experience and the ability of the person to carry out a certain task.

Some women recommended strategies that confront gendered structures, beliefs and prejudice, and that challenge the prevailing gender order. For example, at the organization level, some women argued that it is important to fight and be assertive:

When we really want to change something and really want something, we have to fight for it, we have to assert ourselves and we have to present arguments that we're an added value for the company. When you think that you really deserve something, you must be able to approach your supervisor or the general manager and negotiate your own conditions.

Other informants mentioned aspects related with protecting one's family and personal lives from excessive work demands, 'taking the lead in one's life' and not letting the company decide one's path. One participant underlined that women should not be afraid of not putting in extra hours or of getting pregnant. Another interviewee explicitly advocated the importance of not feeling guilty for wanting both a career and a family:

My first advice is to be psychologically ready, not being afraid… if you want to have a family, ensure that you don't feel guilty, my daughters are very happy children. Sometimes they don't see me for three or four days, a week, but they know that I come back… and this gives me stability, it allows me to concentrate on my work, because I know they're fine and happy, because they also know that I'm fine.

She further emphasized how women feel burdened by guilt in Western societies, and how this should change:

The Western Catholic or Christian woman still lives with the guilt… and, in more industrialized societies, she also lives with the pressure that she has to be the best, and we have to be much better than men.

Another set of individual strategies proposed by informants was related with challenging gender roles at home, and the importance of having a supportive partner:

The best thing is to find a partner that is not afraid and that is self-confident, that understands you and that helps you if you want to have children, or if you already have a family.

However, other strategies proposed do not address the gendered status quo. They focus either on submission and resignation, or on 'improving women' so that they can be regarded as equals with men. The underlying idea is that women need to be 'fixed' and adapt themselves to the system, e.g. through education, so that they can make their way up. Several women pointed out the importance of investing in education for promoting women's career advancement and attaining gender equality. Some women had themselves invested significantly in their education and had pursued or were pursuing graduate degrees

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and MBAs. The following quotes reveals that education may be more important for women than for men in terms of attainment of recognition:

Unless I have the medals [i.e. academic degrees] on my shoulders and on my forehead, then they [other CEOs or business partners] don't even look at me. (…) Sometimes I have meetings at the embassies, and they look at me like 'Are you the secretary? Are you the cleaner?' (…) So education is one of the trumps you need to use. (…) Until they get to know you and your credibility, they don't have any other way to know your competence. So the first thing they see is if you have a degree and your title.

Some informants suggested that the only way for women to be less discriminated against is to be successful and more hard-working than men:

I think that the only way of a woman asserting herself and feeling less discriminated against and more approved of, is to be successful and commit herself to work, but this requires redoubled efforts, because… she'll always have that burden of… 'she's a woman and may get pregnant'…

I have the feeling that sometimes it looks like we have to work more to prove we are as competent or more competent…

Another example of strategies that are hardly critical of the gender order were that women should learn time management:

I think that one of the things we should teach to women is time management. Women are not very well structured or organized. I think that for them to do so many things they have to be highly disciplined and organized… I think that if women were more structured and disciplined, they would be able to advance much more than they have until now.

Other examples were that women should show their availability, sacrifice family needs and delay motherhood:

We make our own success, it's our dedication, our effort, our availability, our sacrifices, mostly sacrificing family life.

[The travel sector] is a field that isn't easy, because you have to give up a lot of your personal life, it demands a lot of dedication, and I think that all this dedication, effort and professionalism with which I faced my responsibilities, partly putting my personal life aside, was what led me to be recognized and that's what allowed me to grow in the company.

Some interviewees also suggested not having children or having children later to advance in one's career.

Regardless of the type of individual strategy suggested, it is clear from women's discourses that they privilege solutions at an individual rather than at a structural level. In addition, women seem to face contradictions between wanting changes to take place, and refusal that equality be achieved through measures that can be construed as non-meritocratic (e.g. quotas), since they want these changes to occur

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because women's value and capabilities are recognized. Table 3 summarizes the individual strategies proposed by women. While some of the strategies proposed challenge the gender order, others reinforce it. Such strategies for 'fitting in' do not aim to challenge gender structures or the male career model, but instead that women adapt themselves to the *status quo* without disrupting it. Instead of rebelling against the prejudice of women as less career-oriented, the male career model or the inequality in the distribution of tasks at home, these strategies align with the prevailing gender order without addressing the gendered structures and beliefs in their organizations, family and society. Besides, the framing of gender inequality as an 'individual responsibility', namely women's responsibility, can be disempowering (Verloo et al., 2007). Hence, such strategies reveal on the one hand a lack of gender awareness and, on the other hand, a belief that career-making should be up to individual women, regardless of how constrained they are by societal structures (Carvalho, Costa, Lykke, & Torres, 2018; Shelagh Mooney, 2014).

Table 3. Individual strategies for career advancement proposed by women

Strategies that confront gendered structures and beliefs	Strategies that do not challenge the gender order
• it is important to fight, be assertive, not feel compelled to be constantly available or to put in extra hours • women should not be afraid of getting pregnant • women should not feel guilty for wanting a career or for wanting to have a family • tasks at home should be divided equally between partners	• the only way for women to be less discriminated against is to be successful and more hardworking than men, and invest more in education than men • women should learn time management • women should show their availability • women should sacrifice family needs and delay motherhood

Source: developed by the author

SOLUTIONS AND RECOMMENDATIONS

Although the tourism industry in Portugal is feminized and, to a certain extent, may 'open doors' women, it is still far from being a truly 'women-friendly' industry. In a context where even women themselves managers themselves lack gender awareness to a considerable extent, it is important to raise gender awareness of all the stakeholders in this field, so that it is possible to see through the apparent gender-neutrality of the sector, and gradually attain structural and cultural changes in organizations, and improvements in terms of gender equality. Making subtle processes visible may have an impact on the daily workings of organizations (Kantola, 2008). In fact, high visibility and low legitimacy of inequalities may enhance the possibilities for change, while social movements may contribute to both high visibility and low legitimacy (Acker, 2006).

Stainback et al. (2010) argued that changes towards equality are more likely to be linked to pressures on organizational fields than to direct pressures on specific workplaces. There is evidence of 'mimetic isomorphism' across industries, which, through inertia, leads to the institutionalization of gender and other social inequalities. Hence, it is important to act not only at the level of individual workplaces, but also at the industry level (Stainback, Tomaskovic-Devey, & Skaggs, 2010, p. 240).

Overtime, it is essential that mentality and cultural changes take place. This can be achieved not only through awareness-raising practices, but also by setting an example. Despite the central role of organizations as places of production and reproduction of gender in our society, this does not mean that the responsibility for gender equality should be displaced from the state to organizations. Women's balanced representation in political and decision-making bodies is crucial to achieve change and undo

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gender prejudice and gender stereotypes. Education can also be an important tool to impart such values to citizens from a young age. Esping-Andersen (2005) contended that if men had a more 'female' life cycle by also having interruptions in their careers, employers' gender-asymmetric expectations would be neutralized, and gender-specific discrimination in the labor market would be weakened.

Work-life balance and gender equality measures, whether at the state or organizational level, should question the status quo and be transformative, rather than a mere tool to disguise and conceal more structural and deep lingering inequalities. Research participants considered that flexibility is important. However, some types of flexibility benefit more the employer than the employee, and they are a means of ensuring constant availability from the employee to respond to work demands under any circumstance (Costa et al., 2017). Still, some sort of flexibility is part of a supportive work environment and is important for work-family balance. There should be more flexibility in scheduling, and it should be adapted to each one's individual needs when possible (Magnini, 2010).

One measure that is beneficial, but simultaneously questionable, is that kindergartens and other childcare services have longer opening hours, and that they are also open during weekends and holidays. Although this may reinforce the prevalence of the professional sphere over the family sphere, a change in organizational procedures and the way the sector works might be less realistic. However, it is also possible to challenge the way work is being done. For example, it should be discouraged to schedule meetings outside normal working hours. In addition, we believe that it is important to discourage the practice of carrying out important negotiations outside the workplace during the weekend or at night, since such practices are likely to have a negative impact on workers with family responsibilities. In fact, such practices are not family-friendly, perpetuate traditional gender roles, and are exclusionary towards women. Besides, business trips should be scheduled whenever possible with considerable antecedence, so that workers can make the necessary arrangements in their private lives to accommodate that work requirement.

The gender pay gap is a problem that persists despite legislation that prohibits pay discrimination. Therefore, our proposal would be either to discourage such individual negotiations, which may not be very realistic in business terms, or to make such negotiations more transparent. In order to promote gender equity, Williams et al. (2012) also proposed that workers should be informed about the salaries of their colleagues.

Other measures could be creating mentorship programs for women tourism professionals, giving more visibility to successful women to speak at tourism events, and ensure that women are well-represented on public-private tourism councils, committees and advisory boards (UNWTO, 2011).

It is also crucial to monitor the evolution of women's representation in leadership positions in the tourism sector, as well as their distribution across all hierarchical levels. Wider sectorial organizations, such as UNWTO or the WTTC could also be involved in such actions. In addition, it is important to approach power structures and not only engage in a 'quantitative' discourse about the percentage of women on boards or collect data as a goal in itself (Lombardo & Meier, 2007). Therefore, it is also important to include gender experts and civil society actors in the change process.

FUTURE RESEARCH DIRECTIONS

Future research on gender and tourism labor should bring gender power relations to the forefront of analysis and engage in gender-aware critique. Gender-aware research in the tourism field has only 'ignited'

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in the last few years (Figueroa-Domecq, Palomo, Flecha, Segovia-Perez, & Vico, 2017). A greater focus on the gendered nature of organizations would improve understandings about gendered tourism careers.

The present study focused on women managers' gender awareness of the tourism sector. Longitudinal studies are also important in order to understand how women's perceptions about the industry change as they advance in their careers. Future studies could also analyze the gender awareness of other groups of workers, namely men and workers in non-managerial positions. Another avenue for future research is the inclusion of intersectional analysis (Acker, 2006) in order to study workers' awareness of other "axes of power", such as nationality, ethnicity, race, class, or disability, and their intersection with gender.

Subsequent research on gender, management and tourism organizations could go beyond the analysis of women's views and perceptions of gender equality, to investigate how women effectively confirm and/or challenge the gender order both at work and at home.

Another important area of research is the analysis of the effectiveness of gender awareness campaigns in different contexts, in particular in organizations. Kantola (2008) noted that merely making subtle processes of discrimination visible had an impact in the daily workings of a department. Hence, the power of raising gender awareness should be harnessed, rather than neglected.

CONCLUSION

The purpose of this article was to analyze the gender awareness of women managers in the tourism sector in relation to two aspects: perceptions of gender inequality and views of what could be done so that more women advance in their careers. Most women denied the existence of discrimination in tourism, while recognizing situations of discrimination. These contradictions in women's discourses reveal a lack of gender awareness. Although two thirds of the interviewees experienced hidden discrimination, most of these women did not label hidden discrimination as "discriminatory" behavior. Hidden discrimination may thus be considered as "natural" behavior, in the context of a society where gender prejudice still prevails. Several studies have shown that women tend not to label situations of hidden discrimination as "discrimination" (Kantola, 2008; Wahl, 1992). Discrimination remains hidden because of the gender blindness and the lack of tools for analyzing gender (Kantola, 2008). Certain behaviors are not labelled as discrimination and go unproblematized because they correspond to the norm, and not to the exception, in organizations (Wahl, 1992). Benschop and Doorewaard (1998) also concluded that gender inequality prevails in organizational practices, despite a dominant perception of equality.

The relative invisibility of inequalities and the rejection of the victimization discourse were also observed by Kantola (2008). The author pointed out that for women paying attention to the gender equality problems could make 'life difficult' or the 'situation might turn nasty' (p. 217). Kantola presented some possible explanations for the phenomenon: refusal to believe that the very existence of gender was even possible; difficulty to regard oneself as a victim of discrimination; assumption that women who pay attention to gender equality and talk about gender discrimination are 'difficult', 'troublesome', 'inappropriate' or 'pitiable'; and perception that worrying too much about gender inequality could harm their positions. Hence, it can be emotionally and socially demanding for women to regard themselves as victims of discrimination, which is a further reason why discrimination remains hidden. Patterson et al. (2012b) also observed that some women attempted to keep gender out so as not to affect their credibility as leaders. Olsson and Pringle (2004) noted how extremely successful women had internalized the domi-

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nant discourse and supported it, and how they did not acknowledge the existence of a gendered barriers. Their focus was rather on opportunities. Our results seem to be line with those of these previous studies.

The present study went beyond the analysis of women managers' discourses on discrimination. It also analyzed women's discourses on what should be done to facilitate women's career advancement. It was concluded that research participants' lack of gender awareness was noticeable to some extent in the measures they proposed. Informants focused mostly on individual strategies, rather than on organizational or public policies. Framing gender equality as an individual responsibility ultimately blames women for their problematic position (Verloo et al., 2007). Besides, while some women had a transformative vision of gender equality, and proposed policies and strategies that confronted gendered structures, beliefs and prejudice, other women conformed to the existing gendered norms, or focused on 'improving women' so that they can be regarded as equals with men. The underlying idea is that women need to be 'fixed' and adapt themselves to the system, so that they can make their way up. These approaches leave non-gender-neutral structures unanalyzed and ultimately blame women for their underrepresentation at the top, thus further entrenching gender stereotypes. Discourses that over-emphasize individual strategies and individual career-making end up de-emphasizing the role of societal and structural constraints which should be addressed, if the gender order is to be truly challenged.

This study revealed the persisting lack of a gender awareness among women managers. Although some women were more aware of gender than others, certain gendered structures in organizations were still largely invisible for most women managers themselves. Making visible some of the subtle processes through which such gendered structures are maintained can have some impact on change processes in organizations (Kantola, 2008). Otherwise, if gender structures remain invisible, the continuous bolstering of the gender order might harder to tackle. Therefore, it is urgent to make hidden discrimination more visible and to address the lack of gender awareness. Raising awareness of gender structures would facilitate the implementation of gender equality policy at the organizational and state levels. Individual strategies "target only one-half of the participants and not the game" (Benschop et al., 2011, p. 280). However, if gender equality continues to be seen as mostly women's individual responsibility, there may be greater resistance to change efforts at a more structural level.

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KEY TERMS AND DEFINITIONS

Gender Order: Socially and historically constructed pattern of power relations between men and women, establishing a hierarchical difference between them and between definitions of masculinity and femininity. It is present in the society as a whole and is usually regarded as the result of natural, biological differences, rather than the result of a historical construction.

Hidden Discrimination: Behavior that may not be intentionally discriminatory or not perceived as such by the individuals doing the discriminating, while it may be perceived as offensive by the person being discriminated against. It can be subtle and/or covert, and it is usually more structural than personal. It is not usually perceived as "real" discrimination.

Overt Discrimination: Visible, clear, and intentional discrimination, usually presupposing a specific individual who discriminates against. It can be related with the gender pay gap, sex-segregated job advertising, verbal abuse, sexual harassment, sexist language, violence against women, or violation.

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Chapter 53
Women's Employment in Turkey's ICT Sector:
An Examination From a Social Inclusion Perspective

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ABSTRACT

Women constitute one of the risk groups vulnerable to poverty; therefore, enabling their participation in the labor force is crucial to promoting social inclusion in a society. Employment in the information and communication technology (ICT) sector is widely known for being male-dominated, and recently women's participation has become an important subject. This chapter aims to examine women's employment in Turkey's ICT sector from 2009 to 2016, from a social inclusion perspective, by using various indicators. Comparisons with European Union (EU) countries provide perspective on tracking the progress of employment structure and education choices for ICT by gender. All indicators signify the existence of a gender gap resulting in low rates of inclusion of women in Turkey's ICT employment during the period. Examination of the reasons leads to making some policy recommendations to promote social inclusion of women in Turkey's ICT employment.

INTRODUCTION

Information and Communication Technology (ICT) is a rapidly growing sector throughout the world, and hence its weight and importance in the overall economy is rising. This expansion requires an examination of various aspects of the sector (Palvia, Baqir & Nemati, 2018). Employment represents the use of potential resources in an economy, making it one of the main economic issues, but it is also a social issue. The contribution of women to the labor force is crucial, both economically and socially (Dreze & Sen, 2002; Oxoby, 2009; Atkinson, 1998; Balaban, 2014).

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The motivation for this study mainly arises from two facts. One is the exclusion of women from social and economic life, even in developed countries. In developing nations or less developed countries, the degree of exclusion of women is even greater. (Daly, 1989; Dedeoglu, 2009; Tezgel & Gokbayrak, 2013). Increasing the well-being of women and fostering economic and social development requires eliminating exclusion through social inclusion policies (Oxoby, 2009). In this context, encouraging women to participate in the labor force is crucial for fostering not only economic, but also social development. The other fact is that perceptions of jobs in ICT sector are generally accepted as men's jobs (Hodgkinson, 2000). Female participation in labor in the relevant sector is significantly low in many countries, signaling the exclusion of female labor. Both of those facts are even more crucial in emerging economies with respect to their dynamism. Indeed, the topic of social inclusion is not limited only to gender, employment, or the ICT sector. It is a broad concept that encompasses the exclusion of any individual or group from access to or participation in any right or institution (Balaban, 2014; Genc & Cat, 2013; Gunduz, 2007). However, this study focuses on ICT-sector employment from the perspective of gender, in the context of social inclusion.

Turkey is an emerging country that experiences high growth rates in the ICT sector, in parallel with the world (Dube, Dube, & Turan, 2015). Hence, the analysis of employment in the sector from the perspective of gender is crucial for such an emerging economy to comprehend the current state of the gender gap in sector employment. Determining the gender gap in the sector can lead to social policy recommendations for increasing the contribution of women to the ICT labor force. If Turkey succeeds in reducing the ICT employment gender gap in the future, its progress can serve as a success story for other emerging or developing countries. Turkey is specifically chosen for examination because of its cultural structure as a patriarchal country in which women are not expected to engage much in economic life. Hence, the cultural structure is another factor that results in exclusion of women from working life, causing women to live in poverty unless they live under the protection of men (Dedeoglu, 2009). This situation makes it even harder for women to engage in working life. In this context, by examining women's participation in Turkey's ICT employment, this study approaches social inclusion from the perspectives of gender, employment, and the ICT sector. Since the literature lacks studies from all these perspectives, to the best of the author's knowledge, focusing on a single emerging country such as Turkey would contribute to the existing literature. In addition, this study would create benefits for practical use by policy designers.

This study aims to analyze the contribution of women in the ICT sector in Turkey from 2009 to 2016, to examine the participation of women in the labor force and the change in female employment in the sector. Since education shapes future employment structure, the study also analyzes female participation in education in the relevant field. After that, Turkey's position is compared with European Union (EU) countries for the period. The proxies used in this study are the share of women in employment and among ICT specialists, the share of women with ICT education, and the share of women in ICT-related education.

The objective of this study is to seek answers to the following research questions:

Research Question 1: How did female employment in ICT in Turkey change from 2009 to 2016?

Research Question 2: How did the position of Turkey change in terms of social inclusion, compared to EU countries in the period analyzed?

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The findings show that the sector experiences a clear gender gap, and the female participation in Turkey's ICT sector is lower than that in the EU. Education choices show that ICT-related education is mostly preferred by males; however, that gender gap is even larger in the EU than in Turkey.

The rest of the chapter is organized as follows. The concepts of social and economic inclusion and exclusion, their relationship with women's employment in ICT, and the literature review are presented in the background section. Then, the methodology of the paper is explained. Thereafter, Turkey's ICT-sector employment from the gender perspective is examined, with comparisons to EU countries. Then, some solutions and policy recommendations are offered, along with some future research directions and the conclusion.

BACKGROUND

Women's Employment as the Key to Poverty and Social Exclusion

Some societies alienate or deprive certain individuals or groups of individuals of access to certain activities, rights, or institutions. Such deprivation is regarded as social exclusion. However, the coverage and the scope of this concept are generally vague. The vagueness of the concept stems from determining excluded individuals or groups (e.g., elderly, women, children, the disabled) and the reasons behind such exclusions (Atkinson, 1998; Behera, 2013; Genc & Cat, 2013; Gunduz, 2007; Balaban, 2014).

Oxoby (2009) authored a very detailed literature review on the topic of social inclusion, pointing out the definition of social exclusion by Avramov (2002): *a feeling of not belonging and not having been given a chance to be included in society* (p. 26). This definition emphasizes that exclusion is not solely limited to access of individuals to certain rights and institutions; it also affects the behaviors and decisions of those individuals. If any individual believes that he or she will not be accepted into an activity or an institution, or that he or she will not be able to take advantage of a right, then that individual may choose not to become involved in such an activity, right, or institution, effectively self-excluding. In this regard, exclusion is not only an outcome, but also a reason that shapes individual behaviors. Such beliefs generally stem from cultural aspects or from identities (e.g., gender, age, race, ethnicity) (Akerlof & Kranton, 2015; Oxoby, 2009).

The strict relationship between exclusion, unemployment, and poverty signals that excluded groups generally face obstacles to participating in the labor force. If this process continues in the long run, these groups may be at risk for poverty—in short, exclusion may result in poverty (Atkinson, 1998). Women's exclusion from the social and economic aspects of life is well grounded at this point, because of their identified roles in the society as mothers, wives, and daughters. In some cultures, contributions of females in social life are strictly opposed, which in turn results in their nonparticipation in the labor force. Associated with low participation levels or nonparticipation of women in employment, women are prone to be at-risk for poverty. This situation forces women to live under the protection of another person, generally a father or a spouse. It is also a fact that even if women are not excluded from economic life, they may work in "womanly jobs" with low wages, or they are often paid less than men when they undertake equal jobs to those that men hold (Daly, 1989; Dedeoglu, 2009). These explanations clearly show that exclusion and poverty affect each other. Exclusion may result in poverty, and poverty may result in exclusion of an individual from society, because not only is he or she not able to earn enough

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income, but also his or her social status and morale are affected. From this perspective, exclusion and poverty create a vicious circle (Gunduz, 2007).

Policies aimed toward reducing social exclusion are regarded as social policy, and efforts to eliminate deprivation of risk groups are referred to as social inclusion. This approach supports protecting excluded groups through the implementation of relevant policies (Oxoby, 2009; Avramov, 2002). Complicating the design and implementation of social inclusion policies is interrelation of the process with many aspects of life, such as sociology, economics, psychology, policy, law, and human rights (Gunduz, 2007). Oxoby (2009) uses the term "economic exclusion," which focuses on poverty, unemployment, nonparticipation in the labor force, low school enrollments, and obstacles to consumption. In this context, employment is the key in the relationship, insofar as it can break the vicious circle of poverty and exclusion. If social inclusion policies succeed perfectly, deprivations in a society will end, and all individuals will have equal access to work and the same right to participate in the labor force. In turn, this will lead to reduction, and possibly elimination of poverty (Atkinson, 1998; Genc & Cat, 2013). In this context, the examination of female employment in a country would contribute to the academic research by analyzing both women and employment to evaluate the current state of gender employment and offer necessary inclusion policies.

The Necessity of Focusing on ICT Sector

ICT is a rapidly growing sector throughout the world, including in Turkey, and hence its weight and importance in the overall economy are rising (Deloitte, 2012). This expansion requires examination of various aspects of the sector. As one of the crucial dimensions of such analysis, employment plays a key role in understanding both the current state and the future dynamics of the sector. When employment in the sector is analyzed from the perspective of gender, it is obvious that ICT is generally accepted as a male dominated field by various disciplines in academia (Hodgkinson, 2000; Huyer & Mitter, 2003; Arun, Heeks & Morgan, 2004; Vodanovich, Urquhart, & Shakir, 2010; UN, 2002). This perception exists not only in usage, but also in creation and production of goods and services. The situation results in lower female participation in labor in the sector, which signals exclusion of female labor. When various studies for different countries examine the issue with respect to the labor side of economics, it is clear that male dominance is more than just a perception. Hence, there are numerous studies that examine the gender perspective on ICT employment in the literature (Arun & Arun, 2002; Arun, Heeks, & Morgan, 2004; Moore, Griffiths, Richardson & Adam, 2008; Kelan, 2008; Mumporeze & Prieler, 2017; Gonzalez, Revelles, Almeda, Bosch & Garcia, 2016; Annabi & Lebovitz, 2018; Yeganehfar, Isfandyari-Mogghadam & Famil-Rouhani, 2018).

Despite numerous studies exploring the gender gap in ICT employment, only a limited number of studies analyze the gender gap in Turkey's ICT employment. In Turkey, the examination of the subject of ICT usage and its spread—i.e., the digital divide—occurs from the perspective of gender (Torenli, 2006; Aypay, 2010; Yildiz, 2010; Kilinc-Savrul, & Kilic, 2011; Karakaya Polat, 2012; Bilgel-Asici & Kocak-Usluel, 2013; Erdogdu & Erdogdu, 2015). In other words, the literature lacks a sufficient number of studies that focus on the gender gap in Turkey's ICT sector from an employment perspective, to the best of the author's knowledge. Since Turkey is an emerging country, the current state of the subject and any prospective progress could function as a case study for other emerging countries. Hence, this study aims to fill this gap in the literature by examining social inclusion from the perspectives of women, employment, and the ICT sector at once.

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The studies that examine female employment in Turkey's ICT sector are Torenli (2010), Atik and Altiparmak (2011), and Dube et al. (2015). Torenli (2010) examines the impact of ICT and internet usage on female employees. This study specifically focuses on home-based workers from the gender perspective, and finds that the use of ICT does not significantly bring any advantage to women home-based workers in Turkey. Atik and Altiparmak (2011) examine the employment structure of the ICT sector in Turkey in comparison to the 27 countries of the EU from 1990 to 2008. This study aims to analyze the share in overall employment of information-sector employment, and examines the weight of female employment in the sector. The study finds that female employment in the relevant sector in Turkey is remarkably lower than that in EU-27. Dube et al. (2015) examine the relationship between the growth of the ICT sector and the unemployment rates by various aspects in Turkey, such as gender, age, and educational levels, from 1990 to 2013. Among many results of the mentioned study, those from the perspective of gender show a positive correlation between female unemployment rates and growth of domestic production.

WOMEN'S EMPLOYMENT IN TURKEY'S ICT SECTOR

Methodology

This study aims to analyze the progress of female participation in Turkey's ICT-sector employment. Using annual data collected from 2009 to 2016, the study seeks answers to the following research questions:

Research Question 1: How did female employment in ICT in Turkey change from 2009 to 2016?
Research Question 2: How did the position of Turkey change in terms of social inclusion, compared to EU countries in the period analyzed?

This study answers these questions by using various measures. Those measures are the share of females in ICT employment, the share of women as ICT specialists, the share of female employees with ICT education, and the share of women with ICT-related education. The first three measures are generated by the author's own calculations from the European Union Labor Force Statistics (EU-LFS) Household Survey. This is micro data collected from households in 33 countries, 28 of which are EU countries, two candidate countries (Macedonia, and Turkey), and European Free Trade Association (EFTA) countries (Iceland, Norway, and Switzerland). The EU-LFS dataset includes employment, unemployment, and inactivity statistics by economic activity, sex, age, and educational attainment (Eurostat, 2018a). The last measure is author's own calculations from Organization for Economic Cooperation and Development (OECD) Statistics (OECD, 2018b). The relevant subsections present details of those measures and their method of calculation.

To evaluate the progress of Turkey and its position, comparisons with EU countries are made. EU countries were selected for comparison because social policies in Turkey were mainly designed according to European experiences for Turkey's cohesion to EU after 2000, especially during the adjustment process for EU membership (Kilic, 2008). The period is limited to 2009 to 2016, since data before 2009 are not comparable with data after 2009 in the EU-LFS dataset, and the data beyond 2016 are not available for most of the countries analyzed.

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Before directly focusing on the female employment in the ICT sector, the employment structure of the country is examined. Hence, the subsequent section examines the overall employment structure from the perspective of gender, using the author's own calculations from the Turkish Statistical Institute (TurkStat; Official Statistical Institute of Turkey) dataset. After that, the chapter's main focus is addressed.

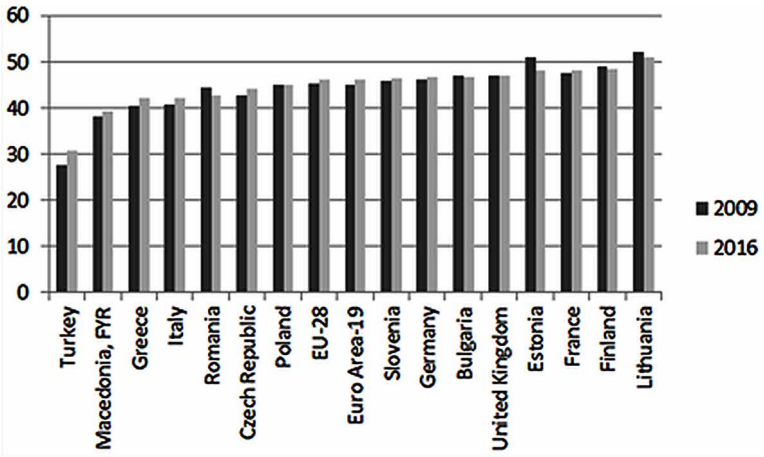
Employment Structure in Turkey from a Gender Perspective

It is necessary to examine the structure of employment in Turkey before focusing on the ICT sector and the gender perspective. In 2016, TurkStat (2018) reported the population older than 15 years old was approximately 58,720,000 persons. The labor force, sum of employed and unemployed, in all the sectors was approximately 30,535,000 in the same year; hence, the labor force participation rate (the proportion of labor force to population over 15 years old) was only 52% in 2016.

OECD (2018b) and Eurostat (2018b) measure labor force statistics slightly differently than that of TurkStat, by limiting both the employment and the population by ages between 15-64. OECD refers to this age group as the "working-age population." Thus, it calculates the labor force participation rate as the proportion of labor force between 15-64 ages to total population within the same age group. OECD (2018b) reports that the labor force participation rate was 57% in Turkey, 71.7% in OECD total, 73.2% in EU-28, and 74.1% in G7 countries, in 2016. These rates clearly show that the relevant measure is remarkably low in Turkey compared to other OECD and EU countries.

Figure 1 depicts the share of women in total employment in Turkey and selected countries in the EU for the years 2009 and 2016. The difference between 100%, and the values in Figure 1 corresponds to the share of men in total employment. The figure shows that the proportion of females in total employment is prominently lower than for men in EU countries, except for Lithuania in 2009 and 2016, and for Estonia in 2009, among the countries examined. However, the gender gap is more viable in Turkey, compared to selected EU countries. Even though there was slight recovery from 27.57% in 2009 to 30.66% in 2016, in Turkey, women's contribution to the work force is remarkably low compared to men, which is indicative of an obvious employment gender gap in Turkey.

Figure 1. The share of women in employment (% in total employment, 2009 and 2016)
Source: (Eurostat, 2018b), own calculations



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The Share of Women in ICT Employment

The primary and most relevant measure used in this study to analyze the gender gap is the percentage of women in ICT employment, i.e. the percentage of women in the ICT sector in Turkey.

The ICT sector comprises some sub-industries, and it may be measured and announced differently in several databases. For this reason, it is necessary to compile statistics from different sub-industries and take the sum of those in order to accurately quantify the relevant indicator. Before focusing on and interpreting the measures in Turkey and other EU countries, there is a need to make define the ICT sector in order to construct series.

The coverage of the ICT sector has changed throughout time, and it has reached its final and agreed upon definition to the OECD's definitions in 2006 and 2007. OECD (2006, 2007, 2011) defines the ICT as, *The production (goods and services) of a candidate industry must primarily be intended to fulfill or enable the function of information processing and communication by electronic means, including transmission and display*. With the use of this agreed upon definition, data can be gathered in the same way in different countries, thus, comparisons can accurately be made at the international level. In order to fit internationally comparable indicators, data on the ICT sector need to be collected and added together, depending on three sub-categories: ICT manufacturing, ICT trade, and ICT services industries. Different economic variables, such as employment and growth, are measured and reported depending on this industry categorization. Therefore, to properly analyze the ICT sector, ICT-related data must first be obtained from different industries, and then added together to reach a measure that reliably reflects the dynamics of the ICT sector. OECD (2006, 2007, 2011) also mentions these specific sub-industries in terms of ISIC (International Standard Industrial Classification of all Economic Activities), which is an industrial classification system of the United Nation (UN), aimed at grouping goods and services under specific codes, so that international comparisons can be made accurately (UN, 2008). Constituted by EU, statistical classification of economic activities in the European Community (NACE) is another classification system, which groups commodities under specific industry categories (Eurostat, 2008). Both ISIC and NACE announce some revisions when necessary. These two industry classifications are frequently used worldwide, thus correspondence lists between these two classifications are available (Eurostat, 2018c).

Since the percentage of female employment in the ICT sector data is not available for Turkey in terms of ISIC, the relevant indicator is compiled from NACE Revision (Rev.) 2 classification. Depending on the correspondence of economic activity between ISIC Rev. 4 and NACE Rev.2 classifications (UNCTAD, 2015), total employment data is gathered as the sum of the following sub-industries classified according to NACE Rev.2 two-digit level: manufacture of computer, electronic, and optical products; telecommunications; computer programming, consultancy and related activities; and information service activities. The correspondence table of NACE from ISIC is provided in Appendix 1.

The proxy generated from the relevant sectors indicates that total ICT employment has increased remarkably from approximately 140,500 persons in 2009 to approximately 219,200 persons in 2016, resulting in a 56% increase in seven years in Turkey. Among the 140,500 total ICT employees in 2009, 106,900 employed were men, whereas the remaining 33,700 were women. The distribution of 219,200 total employed in the ICT sector between the sexes in 2016 was as follows: 162,900 men and 56,000 women. The share of females in ICT employment in Turkey and some selected EU countries is presented in Table 1, in order to compare Turkey's ICT sector with other EU countries from the gender perspective.

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Table 1. The share of women employees in ICT sector (% in total ICT employment)

Country	2009	2010	2011	2012	2013	2014	2015	2016
Turkey	23.99	21.26	19.77	24.16	23.59	23.49	25.57	25.55
EU-28	28.93	28.68	28.75	28.45	28.04	27.87	27.53	27.44
Czech Rep.	34.15	34.56	31.47	32.63	31.37	30.56	30.10	29.09
Germany	28.08	27.71	28.44	27.13	28.45	28.41	28.41	28.43
Spain	31.00	28.40	28.84	30.38	29.64	28.97	27.32	27.39
France	28.47	29.31	31.01	28.07	27.40	28.86	25.00	25.95
Italy	29.86	30.23	29.60	32.44	29.17	28.29	29.26	29.14
Hungary	39.42	-	-	35.41	35.63	36.03	34.05	36.86
Netherlands	20.58	17.49	18.28	19.24	17.83	18.78	18.69	20.44
Poland	34.40	35.39	36.27	35.00	34.20	33.55	32.32	31.24
Romania	36.07	35.52	35.08	37.77	37.50	33.04	38.73	37.68
Slovenia	26.60	32.79	28.42	29.84	27.63	-	32.39	-
Slovakia	-	39.62	40.69	36.29	27.44	29.62	28.15	30.43
Sweden	26.87	25.47	25.38	27.12	26.32	24.22	23.70	24.14
UK	24.37	24.02	22.82	22.97	22.95	23.56	23.43	22.59

Source: (Eurostat, 2018d), own calculations

Table 1 shows the percentage of women's employment in the ICT sector for EU countries and Turkey from 2009 to 2016. The data is constructed by dividing the number of women employees in ICT sector by the total number of employees in the sector. Thus, the difference between 100% and the values presented in the table correspond to the percentage of men's employment in the sector. The percentage of women employees in Turkey did not change much, except for the years 2010 and 2011. The statistics indicate a gender gap in Turkey, showing that approximately only one fourth of employees in the sector are women, except for the years 2010 and 2011. The table clearly shows that the contribution of women to Turkey's ICT sector is remarkably lower than men's, confirming the presence of a gender gap between 2009 and 2016. The contribution of women is even lower in ICT employment than in total employment, which was presented as 30.66% in the previous section. The values of EU-28 also signify that the share of female employees in the sector is remarkably lower than that of males; however, the gender gap is slightly narrower than that of Turkey. The share of women employees is the highest in Hungary and in Romania during the period examined. Female employment in Turkey's ICT sector is slightly below EU-28, which reveals that a gender gap, and therefore female exclusion in the relevant sector's employment is not limited to Turkey's economy.

Figure 2 shows the share of women and men employees in the ICT sector in total employment in the economies of selected EU countries and Turkey for 2009 and 2016. Hence, the sum of men and women's shares in ICT presents total ICT employment in overall employment in economies.

Figure 2 shows that the share of ICT employment is remarkably lower in Turkey than in other selected EU countries. The progress from 2009 to 2016 had been very weak, showing that the gender gap had been viable in the period analyzed. The share of males in total employment had risen from 0.52% in 2009 to 0.62% in 2016; and the same share for females had changed from 0.16% in 2009 to 0.21 in 2016

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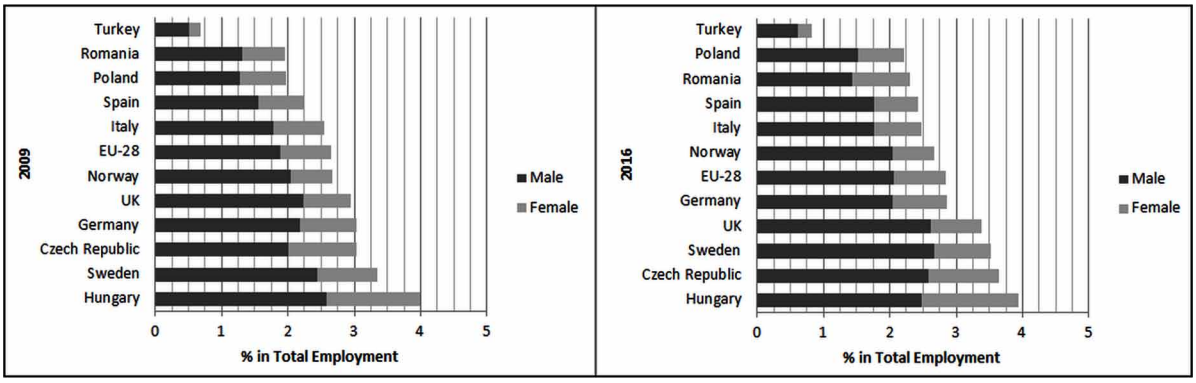
in Turkey. Even the two closest countries to Turkey's ICT sector employment structure, Romania and Poland, have much higher employment shares for women, as well as for total employment of both sexes. Even though total ICT employment is lower than other EU countries, women's share is significantly lower in Turkey, indicative of a gender gap, and hence low social inclusion of women in employment in the relevant sector.

Figure 2. The percentages of ICT sector's men and women employees in total employment (2009 and 2016)
Source: (Eurostat, 2018d), own calculations
Note: For Romania, 2014 instead of 2009; for Poland, 2010 instead of 2009; for Hungary, 2012 instead of 2009.



The Share of Women in ICT Specialists

Another important measure is the share of employed female ICT specialists in relationship to the total employment of ICT specialists. The OECD (2004) defines ICT specialists as individuals *who have the ability to develop, operate and maintain ICT systems. ICTs constitute the main part of their job* (p.219). This measure is particularly important since it represents ICT-intensive employment and the capability of using digital skills in an economy. Not only is the analysis of the current situation important, but also examination of indicators throughout time is also crucial to evaluate the trend of relevant employment (European Commission, 2015).

The classification of occupations is built upon a widely known job organization system, the International Standard Classification of Occupations (ISCO), offered by the International Labor Organization (ILO). ISCO classifies ICT specialists by certain groups of occupations, and announces revisions when necessary (ILO, 2012). Detailed information about occupations is provided in Appendix 2.

The data gathered in this study to analyze the share of females in ICT specialist positions is collected from the Eurostat EU-LFS, which collects data depending on OECD (2004) definition in terms of ISCO. A new revision of relevant classification, ISCO-08, was released after 2010, causing a severe change in datasets beginning in 2011. In order to keep the data comparable throughout time, the data used in this study does not start from 2009 as the other data. Figure 3 shows the percentages of females in all ICT specialist positions for the years 2012, 2014, and 2016.

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The number of ICT specialists for both sexes in Turkey was 245,200 persons, and women constituted only 24,300 of the specialists in 2016, signaling the existence of a gender gap among ICT specialists in Turkey. Figure 3 shows the gap clearly, not only in 2016, but also in 2012, and 2014, by comparing the percentages of female ICT specialists in all ICT specialist positions for Turkey and selected EU countries.

Figure 3. The percentage of women in all ICT specialist positions (2012, 2014, and 2016)
Source: (Eurostat, 2018e)

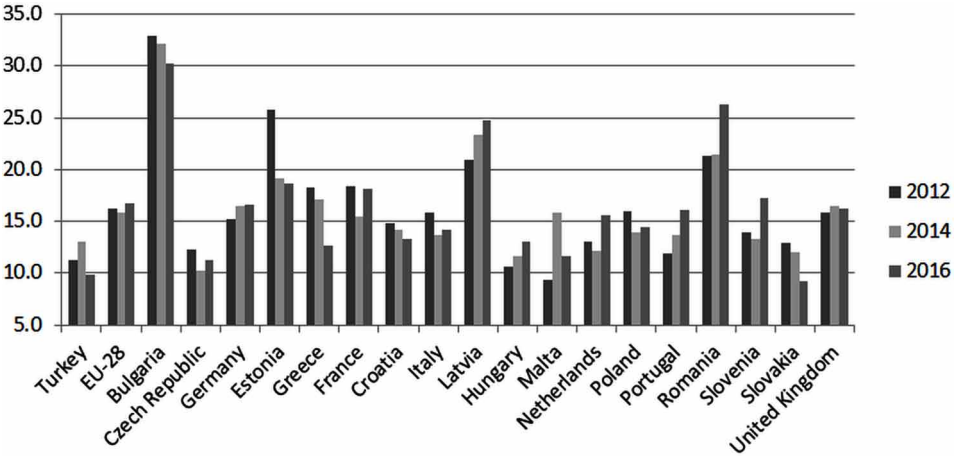

Figure 3 shows that the percentages for 2012, 2014, and 2016 were 11.3%, 13.1%, and 9.9%, respectively, following a fluctuating trend between approximately 10% and 13% in Turkey. The percentages reported for EU countries also reflects a gender gap showing that the position of ICT specialist is an occupation that is male dominated in practice. However, the share of female ICT specialists in Turkey is remarkably lower by comparison. These measures reveal that there is a considerable gender gap in the employment of ICT specialists in Turkey, and this disparity is greater than in other selected EU countries. The Czech Republic, Hungary, and Slovakia are the other countries in the analysis that remarkably differentiated from the remaining countries by gender perspective for the years examined.

The Share of Female Employees With ICT Education

Further understanding the gender gap is facilitated by examination of female employees who are equipped with ICT training. The data depicts employed persons with ICT education, focusing not only on the ICT sector, but all sectors, by examining employees who were educated in ICT disciplines. In other words, the data does not differentiate these employees depending on their sector of employment (Eurostat, 2018f).

The classification of the disciplines that correspond to ICT education is made according to United Nations Educational, Scientific and Cultural Organization's (UNESCO) The International Standard Classification of Education (ISCED). UNESCO approved ISCED at the beginning of 1970s by classifying education according to two aspects: level of education and field of education. The classification aims to create comparable statistics both at the international and national levels (UNESCO, 2006).

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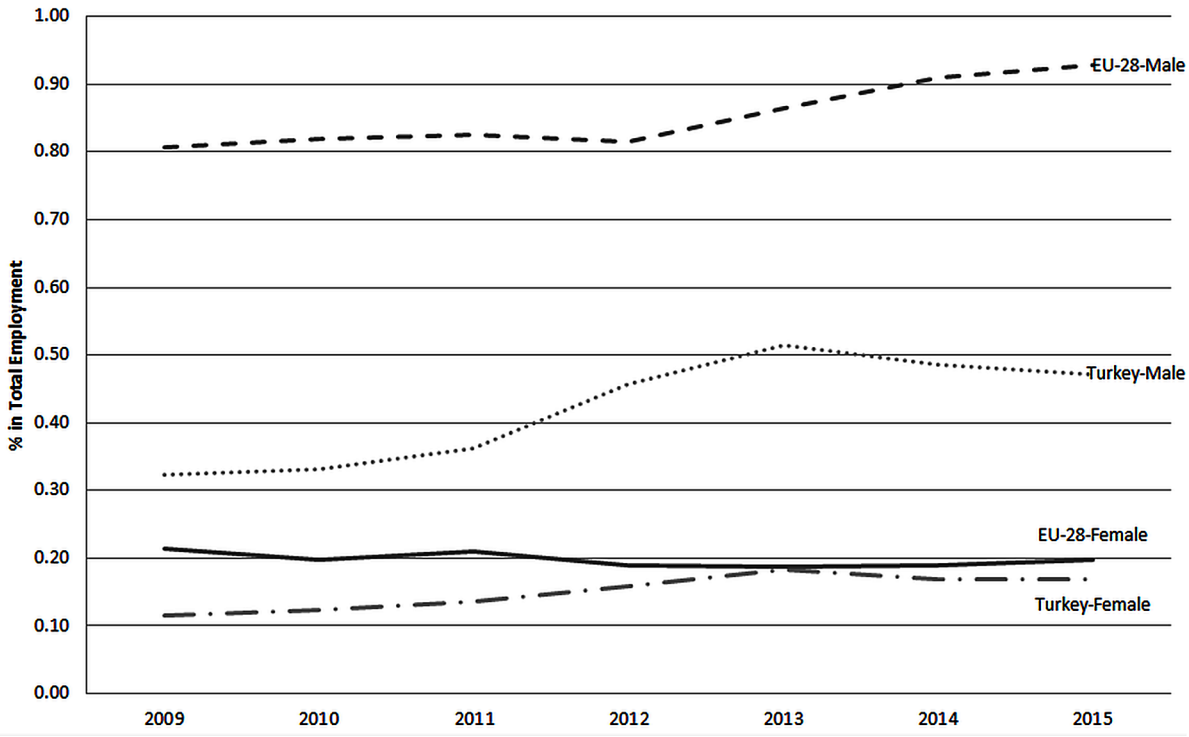
Figure 4 presents the percentage of female and male employees with ICT education in all employees aged between 15-74 in Turkey and the EU-28 countries. The data is constructed by dividing male and female employed persons with ICT education by total employment. The data was collected from Eurostat, and education classification was based upon UNESCO's ISCED. A new version of ISCED (ISCED-2011) is applied to datasets 2016 onwards. Hence, in order to keep the data comparable throughout time, Figure 4 presents data from 2009 to 2015 according to ISCED-1997. According to ISCED-1997, ICT education corresponds to the highest educational levels attained in the following fields: 48 Computing, 481 Computer Science, and 482 Computer use. The numbers before the fields show the ISCED-1997 codes (Eurostat, 2018f).

Figure 4 shows that the percentage of male employed persons who are equipped with ICT education constituted 0.32% of the total employment in all sectors by both sexes in 2009. The value reached its maximum at 0.51% in 2013, and then decreased slightly to 0.47% in 2015. The relevant measures for female employed persons is remarkably lower than males in Turkey, with 0.12% in 2009, hitting a maximum by 0.18% in 2013, and decreasing slightly to 0.17% in 2015. However, the data for EU signifies an even larger gender gap than that of Turkey. The percentage of male employed persons with ICT education increased from 2009 to 2015, whereas the female percentage decreased slightly. These statistics on employed persons with an ICT education further confirm the gender gap that is more obvious in EU countries than in Turkey.

Figure 4. The percentage of male and female employed persons with ICT education in total employment from 2009 to 2015, in Turkey and EU-28
Source: (Eurostat, 2018d; EuroStat, 2018g), own calculations



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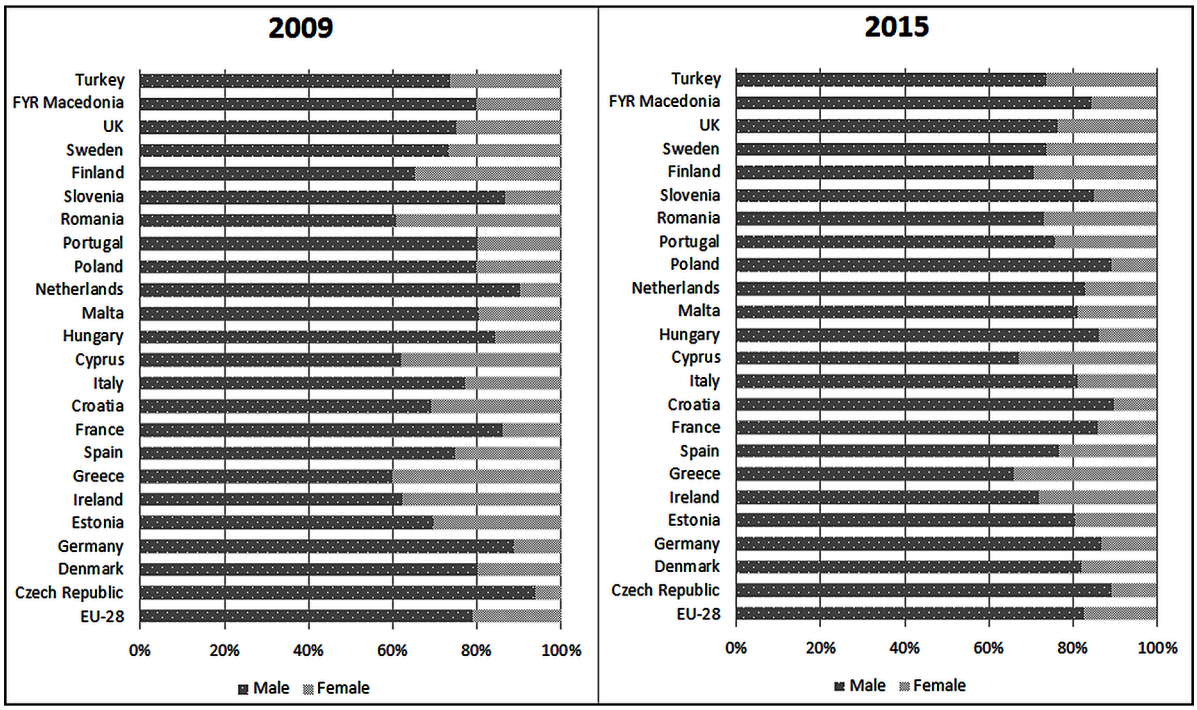
In order to see the gender gap more clearly in Turkey and the EU countries, the distribution of all employed persons with an ICT education by gender as percentages is presented in the Figure 5. The data is from Eurostat's EU-LFS, and was calculated by the author as the percentages of male and female employed persons with an ICT education, in total employed persons with ICT education. Thereby, the sum of percentages of males and females total 100%.

Figure 5. The share of women and men employed persons with ICT education in total employed persons with ICT education
Source: (Eurostat, 2018g), own calculations



Among all employed persons with ICT education, women constitute 26.3% and men 73.7% in 2009, in Turkey. The relevant percentages changed to 26.4% for women and 73.6% for men in 2015; the percentages of women for the same indicator for the EU-28 countries were 21.0% in 2009 and 17.5% in 2015, showing a decrease in the period analyzed. The statistics show that the percentages of male employees with an ICT education are higher in EU-28 than in Turkey in both years, and the shares of female employees with an ICT education are lower in the EU-28 than that of Turkey. This comparison indicates that a gender gap is more viable in the EU-28 than in Turkey from the point of employed persons with an ICT education. Among the countries examined, the UK, Sweden, Romania, Portugal, Spain, and Ireland have closer female percentages to Turkey. The countries that have made progress in favor of the share of female employed persons with ICT education are Portugal, Netherlands, and the Czech Republic. These countries have made progress in narrowing the gender gap from 2009 to 2015.

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The Share of Women in ICT-Related Education

Another measure used in this study is the proportion of women in ICT education, which quantifies the percentages of females currently receiving their ICT education. Since current education choices influence the labor force of the future, education statistics are crucial for analyzing trends in gender employment dynamics. Montagnier and Welsum (2006) emphasized that education in ICT measures also matter, since it represents the individuals acquiring relevant skills to perform ICT-related occupations after graduation. Their study listed computing as a proxy for ICT education, and they revealed that the share of women in computing was lower than that of other fields in 2004 in OECD countries.

In order to analyze the current situation of inclusion of women in ICT education, this study uses data from OECD for 2015. OECD's relevant database currently categorizes ICT education as a specific field that includes the following as sub-fields: computer use, database and network design and administration, software and applications development and analysis, ICT not elsewhere classified, and interdisciplinary programs (OECD, 2018a). Data presents education at the tertiary level. According to the ISCED 2011, tertiary education includes the following degrees: short-cycle tertiary education, bachelor's or equivalent level, master's or equivalent level, and doctoral or equivalent level (UNESCO, 2012). Since the dataset is from OECD database, the comparison is made with OECD member countries (OECD-Total), and European countries that are also members of OECD (OECD-Europe).

Figure 6. The share of women in education by fields (% in both sexes), tertiary education, 2015
Source: (OECD, 2018a), own calculations

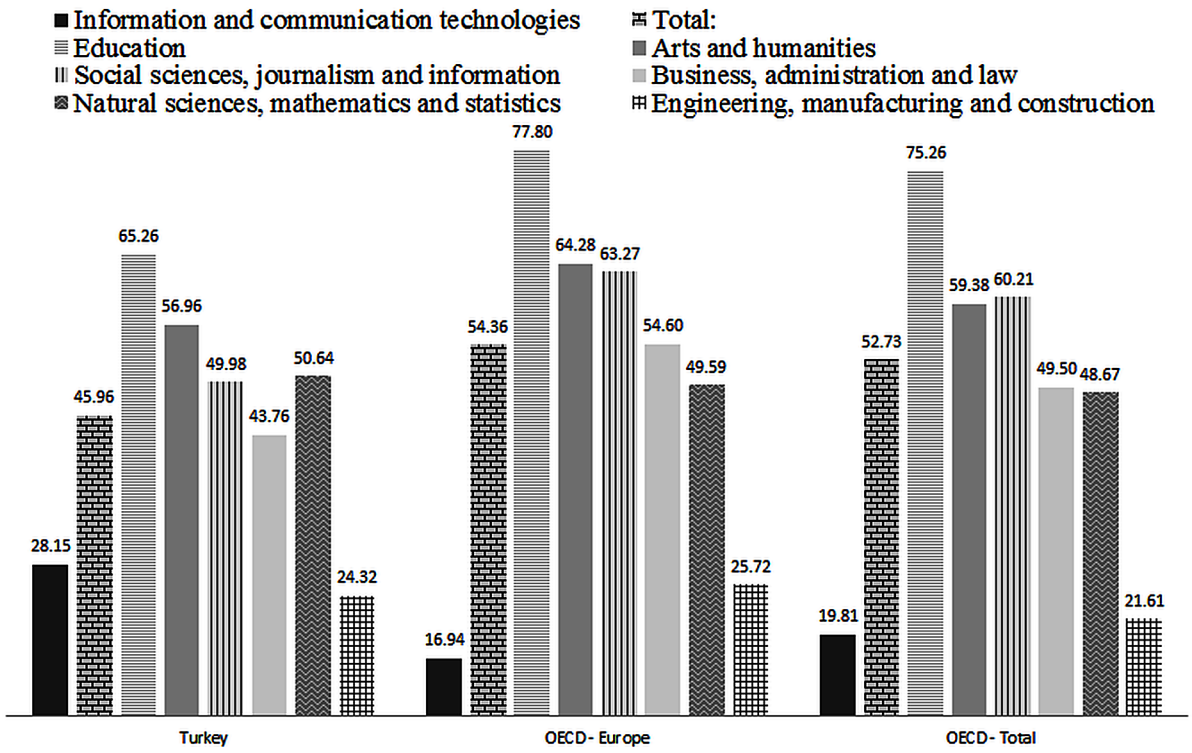

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Figure 6 shows the percentages of enrolled female students in tertiary education in Turkey, OECD-Total, and OECD-Europe in 2015. In Turkey, female students are of a lower share in the total; education; arts and humanities; social sciences, journalism, and information; business, administration, and law; and engineering, manufacturing, and construction, than OECD-Europe countries. Only ICT; natural sciences, mathematics, and statistics are the fields in which the share of female students are higher in Turkey, compared to OECD-Europe countries. The figure clearly indicates a gender gap in ICT education in all OECD countries; however, the gender gap is much more viable both in OECD-Total and OECD-Europe than in Turkey. These statistics also indicate that the share of female students is higher in total fields, as well as in education, arts and humanities, social sciences, business, and law disciplines in OECD countries. Based on the proxies on current ICT education, the dominance of men in the ICT sector is likely to continue, keeping the gender gap visible in the near future in Turkey, as well as in OECD-Total and OECD-Europe.

Some Comments on the Employment of Women in Turkey's ICT Sector in Comparison to EU Countries

The share of female employment both in total employment, and in ICT sector, did not change much from 2009 to 2016. The viable gender gap at the beginning of period examined showed only a slight recovery, and it continued up to 2016, signifying that women are weakly included in ICT employment, as well as in total employment. The gender distribution of ICT employment, in which female employees constitute only 25.55% in 2016, shows this gap clearly at the end of the period examined. The share of women ICT employees in total employment in the overall economy is only 0.21% in 2016. In other words, among all employed persons, only 0.21% of those are women employees who worked in the ICT sector in 2016.

From this point, this is the indicator that shows the existence of the gender gap, and hence a low degree of social inclusion of women's employment in ICT sector the most clearly. Women's employment in Turkey's ICT lags behind EU countries significantly, as well. There is a need to place a special emphasis by highlighting the low participation of men in ICT as well, with only 0.62% in total employment. The share of women ICT specialists was very low during the period analyzed in Turkey, reaching approximately 10% in 2016. This indicator, too, confirms the gender gap in the sector clearly, since Turkey lagged behind all selected EU countries. Even though education-related indicators, the share of female employed persons with ICT education in total employment, all employed persons with ICT employment, and the share of women in ICT education, signifies the existence of a gender gap, it is narrower than that of EU-28. However, the low social inclusion of women in ICT education indicates that the gender gap in Turkey's ICT sector is likely to continue in the near future, as well.

The proxies reflecting the female contribution to the ICT sector clearly indicate a gender gap in Turkey. However, the gender gap in employment is a pervasive problem affecting most sectors of the Turkish economy. The issue is slightly different in EU countries where the gender gap in overall employment is not as extreme as in Turkey. However, female participation in the ICT sector in EU countries is remarkably lower compared to female participation in overall employment. In other words, the gender gap in the ICT sector is higher than the overall employment in EU countries, whereas Turkey's female ICT employment indicates a narrower gap with the overall employment in the economy.

This study answers the following research questions: How did female employment in ICT in Turkey change from 2009 to 2016? How did the position of Turkey change in terms of social inclusion, compared to EU countries in the period analyzed? Depending on the indicators, this study answers the

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first research question as follows: The contribution of women's employment in Turkey's ICT sector did not change significantly from 2009 to 2016. There is only a slight recovery in all indicators related to both female employment and education during the period analyzed. The second research question is answered as follows: The position of Turkey in women's employment from the gender perspective had been behind those of EU countries during the period analyzed, showing that women are not included much economically in ICT employment. There had been a slight recovery in Turkey, but it is still behind EU countries. The education side of the issue, too, signifies that, the inclusion of women in ICT education is very low in Turkey. However, when its position among EU countries was examined, Turkey was ahead of the EU-28, and most of the EU countries in the period examined. This situation shows that, women are socially more included in ICT education in Turkey than that of the EU-28.

SOLUTIONS AND RECOMMENDATIONS

ICT is a rapidly growing sector; therefore the share of its employment in overall employment is expected to increase in economies. Moreover, the employment structure (i.e. by age and gender) of the relevant sector is crucial to track the future growth of the sector. The structure of women's employment in ICT in Turkey has been examined in the previous section, and it is clear that the contribution of women's employment in Turkey's ICT sector is remarkably low; the relevant ICT education statistics did not change significantly from 2009 to 2016.

In order to experience progress in women's participation in ICT employment, there is a need to examine the reasons behind it. In Turkey, the problem starts with women's low participation in the labor force. The main reason may be the *norms* in Turkish society. Pareto (1920, 1980) puts forward that people get utility depending on their tastes, however, usefulness also depends on the view of others in a society. Based on norms, individuals are categorized depending on the types of people from different aspects such as gender, age, race, ethnicity, etc., and different identities arise in societies. The views of others shape the norms in a society, and norms can change by means of formal and informal education, over the course of time (Akerlof & Kranton, 2005). These norms and categorizations build perceptions, and those perceptions may create exclusions in societies. Turkey is a patriarchal country in which most of the population is Muslim. In such countries, women face difficulties in participating in social and economic life, and in entering the labor force (Cherayi & Jose, 2016; Tariq & Syed, 2017; Vodanovich, Urquhart, & Shakir, 2010). In Turkey, the role of women is being mothers, wives, or daughters whose main responsibilities are taking care of housework and members of the family, as well as the older relatives (Gunduz, 2007). Thus, their contribution in the labor force is sparse, confirmed by the statistics provided in the previous section. Moreover, the Social Security Institution (SSI) of the country provides social services to citizens if they are employees or relatives of an employee. The social security system is structured to offer more benefits to wives, and daughters compared to sons (Kilic, 2008). This structure indicates the existence of a vicious cycle of social exclusion in Turkey from the gender perspective. Such that the culture and the perceptions affect exclusion of individuals, and this situation in turn affect the behavior of individuals, as well as the working mechanisms of institutions. Therefore, first of all, there is a need to change the perceptions in Turkey by viewing women's roles differently, so that they should be perceived equal to men. With this regard, priority should be given to women's role as employees and must be given by social policies.

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A special emphasis needs to also be placed on the perceptions of the ICT sector, which is widely accepted as a male dominated field in the Turkish economy. Women should be encouraged to work in the ICT sector or in ICT-related jobs. However, the current gender gap cannot be closed suddenly, since it takes time to change the structure of employment in an economy. The current gender gap in the sector can be reduced in the near future by increasing the share of women in ICT education. In order to eliminate perceptions towards ICT employment and education, female students can be encouraged to attain ICT education by social policies. In this manner, Turkey does not only need to provide higher female participation rates of employment in overall economy, but also needs to encourage female students to attain in ICT education. These goals can be achieved by designing coherent social policies, which aim at reducing economic exclusion of women in the society, and implementing such policies in a decisive way.

FUTURE RESEARCH DIRECTIONS

Future research may be directed to ICT education from the gender perspective in Turkey, as parallel to the solutions and recommendations offered in the previous section. Since education statistics signal the structure of employment in the future, an emphasis needs to be placed on the training aspect. The indicators show that even though the ICT employment of women is significantly lower than that of EU countries, the share of female students in ICT disciplines is higher than that of the OECD-European countries. This situation, which can be interpreted as the gender gap between Turkey and the EU countries, is likely to be narrowed in the future. However, this interpretation does not reflect an optimistic view since Turkey remarkably lags behind many European countries with respect to female participation in the ICT sector of employment. In order to close the gender gap in the long run, Turkey must attach importance to encouraging young individuals to be trained in ICT-related disciplines. However, as Akerlof and Kranton (2005) emphasized, expectations about the future shape the current decisions of individuals. If young individuals believe that they will not be able to find jobs in the relevant sector, they will not prefer to be equipped with ICT education. From this point of view, there is a need to change perceptions towards ICT occupations, which is generally accepted as a "man's job." This can be achieved by analyzing the perceptions of individuals at the micro level. Depending on the result of such analysis, appropriate educational policies should be designed and implemented under the leadership of government institutions.

CONCLUSION

This study analyzes women's employment in Turkey's ICT sector with regard to social inclusion from 2009 to 2016, with an attempt to seek answers to the research questions proposed in the previous sections. Depending on the indicators of this study, it is pointed out that participation of women in ICT sector employment is remarkably low. The progress during the period had been little in the relevant sector. Indicators related to the ICT education of women are also remarkably lower than that of men, and the progress in the period analyzed was very weak. This situation confirms the existence of a gender gap, and low social inclusion of women both in ICT sector employment and in ICT education attainment in Turkey from 2009 to 2016.

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When Turkey's position in female employment in the ICT sector compared to EU countries is examined, the indicators show that Turkey has been obviously behind those in the relevant sector from 2009 to 2016. However, the position of Turkey compared to EU countries from the points of female employed persons with an ICT education, and females in ICT education attainment, is different. Even though the education indicators confirm the existence of a gender gap, and low inclusion of women in education, Turkey is ahead of most of the EU countries, and this was maintained during the period analyzed.

Turkey is a patriarchal country in which most of the population are Muslim. In such countries, women are not included much in the economic life since their identities in the society are generally based primarily on maternity and housewifery, rather than on their productive role in employment. As a consequence, female employment is significantly low in Turkey, not only in the ICT sector, but also in the overall economy. In addition to this, occupations in ICT sector are widely accepted as being men's jobs in Turkey. When these two situations come together, the degree of women exclusion in Turkey's ICT employment is high. In order to reduce and eliminate the perception, and lower social inclusion, social policies that aim at changing the role of women in society should be designed. Moreover, it is known that education equips individuals with the necessary information for any occupation, and those individuals build up the future's labor force. For this reason, an emphasis should be placed on the encouragement of female students to attain an ICT education. In short, coherent social policies regarding shaping the role of women in society, and encouraging female students to be equipped with an ICT education should be designed and implemented simultaneously. Pursuing these policies will promote the social and economic inclusion of women employment in Turkey. However, the effects of such policies are expected to be apparent in the long run. Therefore, pursuing those policies in a decisive way over the next several years is necessary in order to experience positive, long-term effects both in the society and economy.

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KEY TERMS AND DEFINITIONS

Economic Exclusion: Barriers that limit or block the access or participation of individuals in economic life, more precisely in labor, education, consumption, or economic transactions.

Economic Inclusion: Enabling individuals the right to access and participate in economic life.

Employment: The condition of working, generally emphasizing the paid work.

Gender Gap: Difference between males and females regarding any subject.

ICT Employment: The condition of working in the ICT sector, generally emphasizing the paid work.

ICT Sector: An industry that aims at producing, processing, and transmitting information, as well as creating communication with the use of electronic tools, and technology.

Labor Force: The sum of employed and unemployed persons in an economy.

Social Exclusion: Alienation or deprivation of any groups or individuals from social life.

Social Inclusion: Efforts that aim to eliminate alienation or deprivation of individuals from social life.

Women's Employment: The contribution of women to working life, generally emphasizing paid work.

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APPENDIX 1

Depending on OECD's most recent definition of ICT sector (OECD, 2006, 2007, 2011), the sector comprise from three industries: ICT manufacturing, ICT trade, and ICT services industries.
2-digit NACE Rev.2 (corresponds to 3-digit ISIC Rev.4):

- C26 Manufacture of computer, electronic and optical products
- J61 Telecommunications
- J62 Computer programming, consultancy and related activities
- J63 Information service activities

According to United Nations Conference on Trade and Development (UNCTAD) (2015), the most accurate correspondence between ISIC to NACE for the ICT sector is from 4-digit ISIC Rev.4 to 3-digit NACE Rev.2. However, due to lack of data for some countries; this study uses correspondence from 3-digit ISIC Rev.4 to 2-digit NACE Rev.2

APPENDIX 2

A new revision of ISCO, ISCO-08, was released after 2010, and the change was applied to the dataset of Eurostat's EU Labor Force Survey from 2011 to date. According to ISCO-08, ICT specialists are the employees who work in the following occupation fields (Eurostat, 2018h):

- ICT service managers
- Information and communications technology professionals (software and multimedia developers and analysts, and database specialists and systems administrators)
- Information and communications technicians (ICT operations and user support technicians, and communications technicians)
- Electronic engineers; telecommunication engineers
- Graphic and multimedia designers; information technology trainers
- ICT sales professionals
- Electronics engineering technicians
- Electronics mechanics and servicers
- ICT installers and servicers

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Section 5

Organizational and Social Implications

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Chapter 54
Impact of Workplace Diversity on Employee Performance:
A Case of Some Selected Private Universities in Ghana

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ABSTRACT

The authors explore how the milieu of workplace diversity affects the relationship between employee and performance. In particular, we theorize and empirically examine the moderating effects of four (4) categories of diversity context variables: age, gender, ethnicity, and educational background. The authors perform analyses on 175 out of 320 respondents consisting of academic and administrative staff of four selected private universities in Ghana. The results showed, for example, that workplace diversity has an overall influence on employee performance, however, educational diversity has more effect on employee performance in the universities compared to the other competing variables used in this study. Age and educational diversity had a significant impact on employee performance in the universities whilst gender and ethnicity diversity had no influence on their performance. We discuss future research directions regarding diversity, workgroup context, and performance outcomes and outline some recommendations for administrators and university leaders.

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1. INTRODUCTION

With the world that is changing or revolving constantly, diversity management has become a popular term used in modern society and management practice. Many organisations around the world have developed policies that aim to promote and manage diversity. Diversity management refers to the voluntary organizational actions that are designed to create greater inclusion of employees from various backgrounds into the formal and informal organizational structures through deliberate policies and programs (Hays-Thomas, 2004; Kaiser & Prange, 2004; Nyambegera, 2002; Özbilgin, Mulholland, Tatli, & Worman, 2008; Palmi, 2001; Shifnas & Sutha, 2016).

Emuze and James (2013) are of the view that organisations which adopt diversity as a source of innovation, growth and development are more likely to show behavioural support and facilitate its implementation with greater focus, persistence, and effort. With respect to current realities threatening organisations today, it might be concluded that workforce diversity may create opportunities or pose challenges to the workplace (Osita-Ejikeme; Ugwuzor, 2014). In a Nation like Ghana with various ethnic nationalities and dialects, as well as different social and religious backgrounds, the subject of diversity in the workplace, particularly among groups, cannot be over emphasized. The study therefore seeks to find out the relationship between workplace diversity and employee performance.

2. LITERATURE REVIEW

2.1 Concept of Diversity

According to Green, López, Wysocki, and Kepner (2002) citied from Esty, Griffin, and Hirsch (1995), diversity is defined as recognizing, accepting, accommodating, appreciating, and celebrating differences among people with reverence to age, class, ethnicity, gender, physical and mental ability, race, sexual orientation, spiritual practice, and public assistance status whilst Naqvi, Ishtiaq, Kanwal, Butt, and Nawaz (2013) defined diversity as the existence of a workforce in which personalities come from different socio-cultural and religious backgrounds.

Workplace diversity is similarly defined as intergroup relations, which play out alongside one another in communication and interaction. It develops a host of complexities related to diversity (Brouwer & Boros, 2010). Lee and Gilbert (2014) further clarified that workforce diversity based on age, gender and ethnicity cannot be viewed in a similar way as workforce diversity that is based on organisational roles and individual aptitudes.

Roberge, Lewicki, Hietapelto, and Abdyldaeva (2011) was of the opinion that managing a diverse workforce is complicated and thus needs organisations' total attention in terms of implementing proper and clear practices that will enhance the performance of the organisation in the short and long term. In addition, Mahadevan, Primecz, and Romani (2014), explained that dysfunctional workforce diversity management arises due to lack of communication between management and employees on how workforce diversity benefits the organisation.

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2.2 Concept of Employee Performance

According to Okoro and Washington (2012), employee performance is the effective discharge of duty for which one is hired. That is, how well an employee is fulfilling their requirement for the job. In the words of Tinofirei (2011) as citied by Zhuwao (2017), employee performance is the "successful completion of tasks by a selected individual, as a set and measured by a supervisor or organisation, to pre-defined acceptable standards, while efficiently and effectively utilising available resources within a changing environment".

Mwatumwa (2016) sees employee performance as a self-perceived performance of an employee in doing their day to day activities

2.4 Workplace Diversity Challenges

Embracing diversity solely cannot help organisations achieve success; organisations need to manage it well (Farrer, 2004). According to Oyewunmi (2018), a major challenge of the diverse workforce is the omission of certain individuals or groups grounded on differences such as, gender; age; ethnicity or cultural affiliation; religion; social class; disability etc.

2.5 Gender Diversity

Gender diversity implies psychological disparities and experience that socially or culturally attached to being a male or a female within the organization (Ali, Kulik, & Metz, 2011). Connell and Messerschmidt (2013) view gender as the description of masculinity or femininity of people. According to Ngao and Mwangi (2013), gender often plays a significant role in affecting employee performance, performance ratings, and related human resource decisions.

Ivanova-Stenzel and Kübler (2011) in their research examined the influence of gender differences in teamwork and team competition using wages. They discovered that performance depended on both the combination of gender and incentive scheme not just the incentive scheme. They also identified a gap between the performance of men and women; men performed better than women when paid according to joint output and when the competition is between teams of the same gender. They advised that combinations of incentive scheme and gender composition in teams should be avoided.

Some researchers also indicate that the absenteeism rate among women is higher than men, which requires the development of initiatives to manage diversity to overcome these problems, such as flexible working hours initiatives and telework. Jayne and Dipboye (2004) argued that gender diversity does not automatically bring positive result such as increased motivation, improved talents, build commitment, and decline conflict.

2.6 Age Diversity

Backes-Gellner and Veen (2009) define age diversity as generational differences among individuals or employees in a corporation and the values and perspectives attached to each. People tend to share a place with their generation no matter the experience they share (Akpakip, 2017). Johnson and Johnson (2010) and Zemke, Raines, and Filipczak (2013) view generation as a set of individuals born and living in the same period, who have mutual attitudes, preferences, knowledge and experiences that affect their

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thoughts, values, beliefs and behaviors. Pitt-Catsouphes, Matz-Costa, and Besen (2009) categorised the age group present at work into six, namely: traditionalists (born before 1946), older boomers (born 1946 to 1954), younger boomers (born 1955 to 1964), older generation X'ers (born 1965 to 971), younger generation X'ers (born 1972 to 1980) and generation Y/millennials (born after 1980).

Backes-Gellner and Veen (2009) observed that age diversity can negatively affect productivity due to differences in the values and preferences of distinct age groups. Joshi and Jackson (2003) observed that there was no impact of age differences on reports of work group or objectives measure group performance.

However, Boehm and Kunze (2015) disputed that an age heterogeneous workforce yields a host of numerous skills, intellectual styles, morals, and preferences that may result in increased productivity. Josef (2010) was of the opinion that older employees have the tendency of opposing change and due to advancement in age, they might have failing memories and are more likely to be absent from work due to ill health and injuries, which could be the result of their being less energetic and enthusiastic unlike the younger employees. Additionally, since jobs are performed the same way by all the different generations of employees of an organisations, the unwillingness of the older employees to learn new skill and acquire new knowledge affect decline in work capacity and performance The resulting effect of these are the main causes for their decline in work capacity and performance (Akpakip, 2017).

2.7 Ethnicity Diversity

Ethnic diversity refers to the heterogeneity in the mother religion, languages, cultures and races that exists among employees in a firm (Hoogendoorn & Van Praag, 2012). Rasul and Rogger (2015) claim that ethnic diversity has an effect on productivity by influencing how people feel motivated about their jobs, the level of efficiency in the firm, employee satisfaction with their job and the quality of products and services that a firm produces.Østergaard, Timmermans, and Kristinsson (2011) observed that ethnic diversity boosts creativity and innovativeness in the firm by expanding the perspectives and viewpoints in the firm. Please cite refrences to suggest that it can also decline same.

2.8 Education Background Diversity

Conferring to Combs (2002), organisational leaders implement educational diversity initiatives in efforts to motivate and encourage individuals to work effectively with others so that organizational goals are achieved. Tracy and David (2011) in their study about the effects of education background diversity towards the employee performance in Britain found that employers commonly reject employing employees whose training, experience, or education is judged to be inadequate.

bestowing to Eduard (2010), employees who are less educated are prone to suffer inferiority complex which affect their performance to a large extent. He argued that such employees who develop a persistent feeling of being inferior end up feeling socially insecure and less confident at work. He concluded that the lack of confidence would greatly damage their performance and could even make them develop a negative attitude toward other employees and the entire organisation.

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2.9 Diversity and Employee Performance

Chew, Lee, Tan, and Tee (2011) investigated the effect of work force diversify (gender, age, ethnic and education background of the employees) on employee performance. The results showed there is increased performance in a diverse workforce. They observed that age diversity has no influence on performance.

Selvaraj (2015) in his study "The Effects of Work Force Diversity on Employee Performance in Singapore Organisations" was of the opinion that workforce diversity yields positive benefits when properly managed; if not, it could lead to negative results. His analysis revealed that age, gender and ethnicity had no statistically significant impact on the performance of employees. He recommended that human resource programmes suggested by the employees to improve the effectiveness of workforce diversity should be worked on.

Magoshi and Chang (2009) in their research found workforce diversity to be a significant factor in explaining a variation in employee performance. Whilst Mwatumwa (2016) in his research found out that workforce diversity does not influence employee work performance at the County Government of Mombasa as ethnicity, gender and educational background did not portray significant effect on performance, positively nor negatively.

Maingi and Makori (2015) showed that, work diversity in terms of education and ethnicity had and influence employee performance. They however suggested that there should be effective policies and strategies regarding the education background diversity and ethnic diversity in the workforce for better employee performance.

3. METHODOLOGY

The population of the study consisted of academic and administrative staff of four (4) selected private universities in Ghana (Table 1). The questionnaire was developed to measure diversity on the basis of instruments used by Chew et al. (2011). The sample size was selected using Krejcie and Morgan (1970) sample size determination table for a finite population. A sample size of 175 out of 320 was utilized for the study. The sample for individual universities was attained by implementing the stratified sampling technique which ensures better coverage of the population.

Table 1. Population and sample size

Universities	Population	Sample
Data Link Institute	86	46
Fountain Head University College	69	38
Central University	122	67
Methodist University College	44	24
Total	320	175

Source: Field work (2019)

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The questionnaire comprised of three sections. Section 1 consisted of demographic attributes like gender, age, level of the respondents and institution. Section 2 comprised of questions related to gender, age, ethnicity and educational diversity measured on a 5-point Likert scale anchored by "Strongly Disagree" (1) to "Strongly Agree" (5). Section 3 comprised of questions related to employee performance also measured on a 5-point Likert scale. The Statistical Package for Social Sciences (SPSS) was used to calculate the Pearson's Product Moment Correlation Coefficient and Multiple Regression Analysis.

Ethical issues that were taken into account in this study were respecting the rights of the research participants, acknowledging the research sites and reporting the research fully and honestly (Stuart & Barnes, 2005). Participants were informed about the nature and purpose of the study. The researcher sought the consent of the participants and assured of their confidentiality and anonymity of the information that was given. The study was done in four Ghanaian private universities due to proximity as the four universities were in the same community. Provide geographical location.

4. FINDINGS AND DISCUSSION

4.1 Demographic Analysis

Sharma (2004) states that demography is the study of the size, territorial distribution, and composition of population, changes therein, and the components of such changes, which may be identified as natality, mortality, territorial movement (migration), and social mobility (change of status).

The distribution presented in Table 2 shows that approximately 68.6% of the respondents are males while 31.4% were females. It can be deduced from the pattern that majority of the respondents were males. The age distribution indicates 23.4% of the respondents were within 20-29years, 52% were within 30-39years and 24.6% were within 40-49years. From the pattern, majority of the respondents were within 30-39years.

The ethnicity of the respondents shows that 9.7% of the respondents were Gas, 19.4% were Fantes, 11.4% were Ashantis, 16.6% were Ga Dangbe, and 13.7% were from other ethnicities. The educational level of the respondents showed that 37.7% of the respondents have obtained bachelor's degrees, 53.1% have obtained master's degrees and 9.1% has obtained doctoral which can be deduced from the pattern that majority of the respondents have obtained master's degrees.

The name of the institution of the respondents indicates that 25.3% of the respondents were from Data Link Institute, 22% were from Fountainhead University College, 38.7% and 14% were from Methodist University College.

4.2 Reliability Test

Cronbach's Alpha and Kaiser-Meyer-Olkin Measure (KMO) of Sampling Adequacy and Bartlett's Test of Sphericity was used to measure the reliability of the questionnaire. Cronbach's alpha is a measure of the internal consistency of a test or scale (Taber, 2018). It is stated as a digit amid 0 and 1. A reliability coefficient of 0.7 or greater is considered acceptable. The Cronbach alpha of 0.908 shows that our instrument is reliable (Mohajan, 2017). This is shown in Table 3.

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Table 2. Demographics

VARIABLES	RESPONSES	PERCENTAGES
Gender	Male	68.6
	Female	31.4
Age	20-29years	23.4
	30-39years	52.0
	40-49years	24.6
Ethnicity	Ga	9.7
	Fante	19.4
	Ewe	29.1
	Ashanti	11.4
	Ga Dangbe	16.6
	Others	13.7
Level of Education	Bachelor's Degree	37.7
	Master's Degree	53.1
	Doctorial	9.1
Institution	Data Link Institute	25.3
	Fountainhead University	22
	Central University	38.7
	Methodist University College	14
Work Experience	2-5years	19.4
	6-10years	39.4
	10-15years	25.7
	More than 15years	15.4

Source: Field Work (2019)

KMO and Bartlett's Test to scrutinize sampling adequacy see whether the data was fit to use factor analysis in data analysis. Table 4 shows KMO measure of sample adequacy as 0.671 which is close to 1. Furthermore, Bartlett's Test of Sphericity significant value of 0.000 was less than 0.05.

Table 3. Reliability statistics

Cronbach's Alpha	No. of Items
.908	39

Source: Field Work (2019)

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Table 4. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.671
Bartlett's Test of Sphericity	Approx. Chi-Square	599.086
	df	10
	Sig.	.000

Source: Field Work (2019)

4.3 Relationship between Workplace Diversity and Employee Performance

H_1 there is a significant relationship between workplace diversity and employee performance

Pearson correlation analysis was conducted on workplace diversity and employee performance in order to establish the relationship among the variables. The correlation shows that there is strong positive relationship between workplace diversity and employee performance at the 1% level of significance (Table 5). Therefore, an increase in workplace diversity would lead to an increase in employee performance and a decrease in workplace diversity would lead to a decrease in employee performance and its p-value (0.000) which is lesser than the level of significance (0.01) shows that the relationship is statistically significant.

Table 5. Correlations

		Employee Performance	Workplace Diversity
Employee Performance	Pearson Correlation	1	.897**
	Sig. (2-tailed)		.000
	N	175	175
Workplace Diversity	Pearson Correlation	.897**	1
	Sig. (2-tailed)	.000	
	N	175	175

**. Correlation is significant at the 0.01 level (2-tailed).
Source: Field Work (2019)

4.4 Relationship between Various form of Workplace Diversity and Employee Performance

Table 6 shows the relationship between various forms of workplace diversity and employee performance. It was observed that there was a moderate positive relationship between gender diversity and employee performance. Thus, an increase in gender diversity will increase employee performance and a decrease in gender diversity will decrease employee performance. Also, the relationship is statistically significant as its p-value (0.000) is lesser than the level of significance (0.01) which was consistent with Alghazo and Al Shaiban (2016) and Akpakip (2017) findings.

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Table 6. Correlations

		Gender	Age	Ethnicity	Educational	Employee Performance
Gender	Pearson Correlation	1	.399**	.473**	.668**	.567**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	175	175	175	175	175
Age	Pearson Correlation	.399**	1	.386**	.378**	.509**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	175	175	175	175	175
Ethnicity	Pearson Correlation	.473**	.386**	1	.866**	.653**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	175	175	175	175	175
Educational	Pearson Correlation	.668**	.378**	.866**	1	.796**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	175	175	175	175	175
Employee Performance	Pearson Correlation	.567**	.509**	.653**	.796**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	175	175	175	175	175

**. Correlation is significant at the 0.01 level (2-tailed).
Source: Field Work (2019)

There was a moderate positive relationship between age diversity and employee performance. This means that an increase in age diversity will increase employee performance and a decrease in age diversity will decrease employee performance. Also, the relationship is statistically significant as its p-value (0.000) is lesser than the level of significance (0.01) which was in contrast with Selvaraj (2015).

There was a strong positive relationship between ethnicity diversity and employee performance. Thus, an increase in ethnicity diversity will increase employee performance and a decrease in ethnicity diversity will decrease employee performance. However, the relationship is statistically significant as its p-value (0.000) is lesser than the level of significance (0.01).

Finally, there a strong positive relationship between educational diversity and employee performance. Thus, an increase in educational diversity will increase employee performance and a decrease in educational diversity will decrease employee performance. Also, the relationship is statistically significant as its p-value (0.000) is lesser than the level of significance (0.05) which was consistent with Akpakip (2017) findings.

Table 7 generated the specific regression equation as

EP = -0.050GEN+ 0.267AG- 0.231ETH+0.928EDU

The regression coefficient for gender diversity of employee performance (B_1) = 0.050 implies that 1% increase in gender diversity will decrease employee performance by 5% holding AG, ETH and EDU constant and its P value of 0.417 which is greater than the 0.05 level of significance shows that there is not enough statistical proof that an increase in gender diversity will decrease employee performance and

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vice versa, thus the null hypothesis has to be accepted. This findings was in line with YISRAK (2017) and Kerga and Asefa (2018) research and in contrast with Chew et al. (2011), Eshegbe and Dastane (2015), Zhuwao (2017) and Akpakip (2017) findings.

Table 7. Regression Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	2.504	2.785		.899	.370		
	Gender	-.067	.083	-.050	-.814	.417	.475	2.106
	Age	.991	.177	.267	5.599	.000	.786	1.273
	Ethnicity	-.357	.139	-.231	-2.564	.011	.220	4.539
	Educational	1.161	.131	.928	8.852	.000	.163	6.144

a. Dependent Variable: Employee Performance
Source: Field Work (2019)

The regression coefficient for age diversity (B_2) = 0.267 implies that 1% increase in age diversity will increase employee performance by 26.7% holding GEN, ETH and EDU constant and its P value of 0.000 which is lesser than the 0.05 level of significance shows that there is enough statistical proof that an increase in age diversity will increase employee performance and vice versa, thus the null hypothesis was rejected. This was in harmony with (Alghazo & Al Shaiban) and contradictory to Chew et al. (2011), Eshegbe and Dastane (2015), Zhuwao (2017) and Kerga and Asefa (2018) findings.

The regression coefficient for ethnicity diversity (B_3) = 0.231 implies that 1% increase in ethnicity diversity will decrease employee performance by 23.1% holding GEN, AG and EDU constant and its P value of 0.011 which is lesser than the 0.05 level of significance shows that there is enough statistical proof that an increase in ethnicity diversity will decrease employee performance and vice versa, thus the null hypothesis was rejected. This was comply with (Maingi & Makori, 2015) and Kerga and Asefa (2018) results

The regression coefficient for educational diversity (B_4) = 0.928 implies that 1% increase in educational diversity will increase employee performance by 92.8% holding GEN, AG and ETH constant and its P value of 0.000 which is lesser than the 0.05 level of significance shows that there is enough statistical proof that an increase in educational diversity will increase employee performance and vice versa, thus the null hypothesis was rejected. The omission of the constant value in the regression equation shows that employee performance cannot be achieved in the study without the influence of the independent variables. Chew et al. (2011), Maingi and Makori (2015) and (Akpakip, 2017) had similar findings whilst Eshegbe and Dastane (2015), Alghazo and Al Shaiban and Kerga and Asefa (2018) findings were in contrast.

Finally, the tolerance value of less than 0.20 or 0.10 indicates a multicollinearity problem. In Table 7 the tolerance values of all independent variables (0.475, 0.786 and 0.220) except educational diversity (0.163) is greater than 0.20 tolerance value which shows that the tolerance level is moderate and good and there is no problem of multicollinearity. The reciprocal of the tolerance is known as the Variance Inflation Factor (VIF). The VIF of 5 or 10 and above indicates a multicollinearity problem. The VIF

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values of independent variables also shows that there is no problem of multicollinearity as all values except the educational diversity are less than 5, thus independent variables have no influence on each other and will not influence the outcome of employee performance in the study.

4.5 Discussion

The purpose of this study was to investigate the impact of workplace diversity on employee performance. The impact of workplace diversity was measured in terms of age, gender, ethnicity and educational background. The results of the study are discussed below:

From the results, majority of the respondents were males. This was in contrast with Zhuwao (2017) and Kossek, Lobel, and Brown (2006) findings.

With regards to ethnicity, there were various ethnicities in the Universities though the Ewes are majority. One can resolve that the workforce is ethnically diverse at the higher education institution. The institutions has an aged diverse workforce which was consistent with Kunze, Boehm, and Bruch (2011) findings who claimed that age diversity has become an unavoidable feature of many organisations.

For educational qualification, Bachelor's degree holders were the least of all. A study conducted by Hoff (2014) found that organisations usually reject hiring people with insufficient educational qualifications, for example primary and secondary qualifications. Gender diversity had a negative and insignificant relationship. Age had a positive and significant relationship with employee performance whereas, Kyalo and Gachunga (2015) had a weak negative and insignificant relationship between age diversity and employee performance.

Ethnicity had a significant effect on employee performance which can be supported by Opstal (2009) ethnic diversity can have both advantages and disadvantages for the organisation.

Educational diversity had a significant and positive relationship with employee performance.

5. CONCLUSION AND RECOMMENDATIONS

A diverse workforce is an indication of a changing world and marketplace. Based on the overall result, workplace diversity has an influence on employee performance, however, educational diversity has more effect on employee performance in the Universities compared to other variables. Age and educational diversity had a significant impact on employee performance in the Universities whilst gender and ethnicity diversity had no influence on their performance.

The study recommends higher educational institutions to make use of common languages such as English to cater for all different ethnic groups as this circumvents communication difficulties and ethnic related conflicts.

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Chapter 55
Cultural Diversity and Performance of Cameroonian Companies

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ABSTRACT

The objective of this study is to highlight the effects of ethnic, linguistic, and religious diversity on business sustainability in Cameroon. To achieve this objective, the authors used data from a survey conducted in the cities of Douala and Yaoundé by the Laboratory for Research in Fundamental and Applied Economics (LAREFA) of the University of Dschang. Using a censored Tobit model, the following results were obtained: (1) Ethnic diversity and linguistic diversity each have a positive effect on the sustainability of Cameroonian companies. However, when the linguistic diversity index is too high, its effect becomes significantly negative. (2) Whatever its level, religious diversity has a negative effect on the sustainability of Cameroonian companies.

INTRODUCTION

Economic growth theories largely recognize that new firms are the driving force of economic growth, that is, creating jobs, stimulating competition, fostering innovation that stimulates economic growth in a society (Acs & Szerb, 2007; Audretsch, 2007; Rothwell & Zegveld, 1982; Schumpeter, 1934). However, to achieve this goal requires both new and old companies must be successful (Tsambou & Fomba, 2017).

Performance is a polysemous, complex and difficult concept to define. According to Villarmois (1998), performance is defined through two almost independent dimensions: an objective dimension of an economic (efficiency) and systemic (sustainability) type and a subjective dimension that is both social (human resources) and societal (legitimacy). In the organizational design of performance, Scott

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(1987) suggests three main models: the rational model, the natural model and the systemic model. The rational approach would tend to focus on the number of units produced for a given period (productivity) and for the number of factor units (efficiency). This approach is consistent with Villarmois' (1998) idea of objective economic performance (efficiency). The natural model, in addition to considering the production function, integrates support activities, which justifies the interest in employee cohesion and morale. The systemic model highlights the elements related to resource acquisition and adaptability.

In 1992, Cameroon underwent a labour market reform. The main objective of this reform was to improve business performance. Unfortunately, it has led to an increase in job insecurity. Thus, in 1992, statistics show that the informal sector contributed to the creation of more than 8 out of 10 jobs. Today, it employs nearly 90% of Cameroonian workers (OIT, 2017). However, according to the latter author, informal enterprises in Cameroon are just surviving enterprises where profits and efficiency remain very low and cannot compete and as a result, they remain inefficient.

Research on the determinants the performance of a firm focuses on two types of sources ; while the first focuses on the firm's external environment and market characteristics (Porter, 1979; Geroski & Masson, 1987; Cano et al. 2004; Grinstein, 2008), the second puts an accent on firm-specific resources such as innovation, organization, marketing, human resources management... (Barney, 1991 ; Peteraf, 1993). Regarding the internal source and particularly human resources, it was mentioned that employee creativity has an impact on company performance (Jaussi & Dionne, 2003). However, this strong creativity among employees is often explained by the existence of diversity within this group (Maznevski, 1994).

Diversity studies (for example, Maznevski, 1994; Milliken & Martins, 1996; Pelled, 1996; Boeker, 1997; Peterson, 2000; Timmerman, 2000) have been conducted using two approaches ; cognitive diversity (knowledge, education, values, perceptions, affection and personality characteristics) and demographic or cultural diversity (gender, language, age, race and ethnicity)

Cultural diversity refers to the degree of dissimilarity between the cultural backgrounds of the members of a social grouping (Périac, 2014). It thus refers, generally, to the absence of the concentration of a particular cultural attribute within a group. This attribute may be ethnic (Lee & Nathan, 2011; Fearon, 200 ; Ely & Thomas, 2001), linguistic (Fearon, 2003), religious (Fearon, 2003), country of birth or nationality (Ottaviano & Peri, 2006; Niebuhr, 2010; Lee & Nathan, 2011). Ethnic diversity refers to the probability that two people randomly selected from a group are of different ethnic origin. Similarly, religious diversity refers to the probability that two people randomly selected from a group belong to two different religions. Finally, linguistic diversity refers to the probability that two people randomly selected from a group speak two different languages.

Reviewing the ethnic map of Cameroon, it can be seen that the country is traversed by cultural diversity. Indeed, this country is home to three major ethnic groups: Bantu, semi-bantu and Sudanese. Similarly, the country has two official languages, English and French. In addition, 256 local languages are spoken in the country. However, although the constitution stipulates that Cameroon is a secular state, there are Muslims, Christians, animists and many other religious groups present in the country.

Much work has focused on the impact of cultural diversity on different forms of performance (Collier, 2000; Ely & Thomas, 2001; Ottaviano & Peri, 2006; Niebuhr, 2010; Lee & Nathan, 2011). Most of this work is based on a theory called "Theory of Homogeneity and Heterogeneity". According to this theory, members of culturally homogeneous groups are more likely to communicate with each other more often because of a unique culture (Blau, 197; Earley & Mosakowski, 2000). As a result, companies with culturally homogeneous groups do not necessarily have to suffer the negative effects of social identity processes (Cheong & Sinnakkannu, 2014). Although Tsui et al. (1992) found that increasing cultural

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diversity within a group leads to social comparison and categorization, Blau (1977) shows that as cultural diversity increases, social barriers weaken as group members are more evenly distributed over a larger number of subcultures (Blau, 1977). The susceptibility of each group member to identify himself with a particular category and conform to its norms decreases, reducing internal tension that prevent social interaction with members of the external group (Blau, 1977).

Empirically, current literature reveals a negative, positive or no relationship between cultural diversity and business performance (Marimuthu, 2008). In some situations, cultural diversity generates conflicts that could lead to political instability and civil wars (Easterly & Levine, 1997; Collier, 2000). These conflicts could negatively affect the performance of companies at the national level. According to Bjornskov (2008), cultural diversity leads to a decline in trust within the group. In addition, in groups where several cultures coexist, coordination is more difficult, communication is slower (Anderson et al., 2011; Doney et al., 1998). Therefore, Knight et al. (1999) argue that team performance tends to reduce as the level of diversity increases.

In other situations, cultural diversity is seen as an essential tool for business performance. According to the latter idea, cultural diversity generates cognitive diversity (Thomas & Ely, 2001; Jehn et al., 1999; Page, 2008). The confrontation of cognitive perspectives within a group, as well as the encounter of distinct areas of knowledge, creativity and innovation, are beneficial to the group's performance (Berliant & Fujita, 2009; Ancona & Caldwell, 1992; Nederveen Pieterse et al., 2013; Somech & Drach-Zahavy, 2013). In addition, foreign nationals can bring specific knowledge of their country of origin, which may be advantageous for the company if it operates in this market (Maznevski, 1994).

In addition, Michel and Hambrick (1992) argue that heterogeneity is positively related to better problem solving and solution creation. As a result, culturally diverse firms tend to become more competitive (Watson et al., 1993). Other authors have based their analysis on the diversity of the management team and have shown that it has a significant effect on business performance (Hambrick & Mason, 1984; Wiliams & O'Reilly, 1998; Awino, 2011). Although Wiliams and O'Reilly (1998) have shown that a homogeneous management team is more beneficial to business performance, Hambrick and Mason (1984) argue that business executives could, with greater demographic diversity, influence the decision-making process and contribute positively to business performance (Hambrick & Mason, 1984). Companies must therefore diversify their workforce to achieve adequate worker performance (White, 2005).

Other authors have been involved in analysing the differential impact of different dimensions of cultural diversity. Thus, many studies deal indirectly with the question of the link between cultural diversity and business performance, laving emphasis on the effect of a particular dimension of cultural diversity: ethnic, religious and linguistic diversity.

Work on ethnic diversity most often focuses on the diversity arising from migration. However, it has been mentioned that the mobility of individuals, a source of ethnic diversity, promotes a process of brain circulation, facilitating the exploitation of their knowledge to create new businesses (Sexenian, 2005). Ethnic diversity is however associated with high rates of business creation (Rodriguez-Pose & Hardy, 2015). Similarly, immigrants can be self-selected in terms of intelligence, creativity, risk appetite and other characteristics that can affect the productivity and creativity of existing businesses (Borjas, 1987; Feyrer, 2008). In addition, highly skilled immigrants are more likely to become high-growth entrepreneurs, partly because they have access to sufficient resources to exploit opportunities (OECD, 2010). They are more mobile and mobility of labour is an important source of innovation for firms and regions (Faggian & McCann, 2009; Simonen & McCann, 2010). In cases where immigrants are highly educated, they can substantially alter the local stock of human capital, which in turn is linked to the productivity of

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the firm (Sanroma & Ramos, 2007; Cowan & Zinovyeva, 2013). Thus, ethnic diversity attracts multiple forms of human capital and undoubtedly encourages creativity, technological and scientific innovation but also business competitiveness (Fainstein, 2005).

Language problems are a major problem facing many companies today (Lambert, 2001). In this regard, language can be an obstacle or facilitator to business performance. However, language barriers can arise between individuals from different cultural backgrounds (Worman, 2006). These barriers then influence various aspects of the business (Imberti, 2007). For example, language barriers can be key factors that prevent market information from reaching company executives (Brannen & Doz, 2012). Katz and Pesetsky (2011) state that employees who do not master the main language used at work may have difficulty expressing their needs or responding to requests from colleagues and clients. Similarly, a client who is unable to clearly understand his or her supplier due to a lack of language proficiency may be frustrated and may go elsewhere (Levinson et al., 2002).

All these can lead to low production, low creativity and poor company results (Levinson et al., 2002). In the same manner, Galbraith and Benitez-Galbraith (2009) show that linguistic diversity is also associated with higher failure rates. To them, countries with high levels of linguistic diversity will have higher start-up rates than linguistically homogeneous countries and similarly, countries with high levels of linguistic diversity will have higher failure rates than countries that are more linguistically homogeneous.

To our knowledge, Cannirella and Streb (2015) are the only authors who have highlighted the link between religious diversity and business performance, especially in terms of innovation. These authors argue that the presence of different cultures, skills and abilities from different religions could encourage business innovation. They find that religious diversity and patented activity have an inverted U-shaped relationship.

From this literature, one observation can be made ; there is a lot of work showing the effects of cultural diversity on business performance. However, theses studies have focused on the cultural diversity of the northern countries, most often due to migration, forgetting that African countries, and particularly Cameroon, have several closed cultural groups (ethnic groups, linguistic groups, religious groups) within their territories. However, the following research question deserves to be asked: what are the effects of cultural diversity on the performance of Cameroonian companies ?

To answer the above question, we set an objective to analyse the effect ethnic, religious and linguistic diversity on the sustainability of companies in Cameroon

METHODOLOGY

This methodology starts with a presentation of the data and ends with a presentation of the econometric model.

DATA

The data used for this work are those collected by the Laboratory for Research in Fundamental and Applied Economics (LAREFA) of the University of Dschang. In 2017, this laboratory conducted a survey among 504 individuals in the towns of Douala and Yaoundé to profile individuals and their businesses. The choice of these two cities was justified by the fact that they are the country's two major towns and

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are home to a little more than 90% of businesses in Cameroun (INS Cameroun, 2010). Random sampling was used for each town.

ECONOMETRIC MODELS

Econometric modelling is based on the nature of the dependent variable. This dependent variable is the sustainability of the company, represented by the time between the date of creation of the company and the day of the survey. It should be noted that this duration is a linear variable that cannot be less than zero. This leads to a censored data model since the dependent variable is in an interval. In this case, a censored Tobit has to be used. If we note the actual $y_{1,i}$ as the actual duration of company *i*, then it is defined by:

$$y_{1,i} = \begin{cases} y_{1,i}^{*} & \text{if } y_{1,i}^{*} > 0 \\ 0 & \text{if } y_{1,i}^{*} \leq 0 \end{cases}$$

where $y_{1,i}^{*} = x_{1,i}\beta + \varepsilon_{1,i} \quad \forall i = 1,...,N$; $x_{j,i}$ denotes the vector of observable characteristics, β vector of unknown parameters and ε the error terms. The variable $y_{1,i}$ is only observable when $y_{1,i}^{*} > 0$. We are therefore in the presence of a model with a limited dependent variable. It is a model for which the dependent variable is continuous but can only be observed over a certain interval.

The starting equation to be estimated is as follows:

$$D_e = \alpha_0 + \sum_{j=1}^{J} \beta_j DIVcul_e + \sum_{k=1}^{K} \lambda_k ent_e + \sum_{l=1}^{L} \gamma_l ter_e + \varepsilon_e$$

where *e* represents the company, *D* represents duration, *β, λ, γ* parameters, *α* the constant, *DIVcul* all variables related to cultural diversity, including control variables related to the company, *ter* all control variables specific to the territory.

Cultural diversity is often captured by a Herfindhal index that is calculated as the probability that two randomly selected individuals belong to the same culture.

$$DIV_j = \sum_{r=1}^{R} S_{rj} * \left(1 - S_{rj}\right)$$

$$\mathrm{DIV_j} = \sum_{\mathrm{r=1}}^{\mathrm{R}} \mathrm{S_{rj}} - \sum_{\mathrm{r=1}}^{\mathrm{R}} \mathrm{S_{rj}^2}$$

where S for example is the proportion of workers in company j who are of the cultural origin r and R is the number of cultures represented among the workers in that company.

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Given that $\sum_{r=1}^{R} S_{rj} = 1$

then

$$DIV_j = 1 - \sum_{r=1}^{R} S_{rj}^2$$

This index will approch zero when heterogeneity is low and close to one when heterogeneity is high (Kemeny, 2017). An index value of zero indicates that all workers in the company are entirely individuals from the same culture. Lee (2014) considers cultural diversity at the enterprise level as the proportion of owners or managers born outside the country. It is a measure of the diversity of the management structure rather than the diversity of the company's workforce. This measure has a great advantage because management is the most important group in decision-making at the company level. The introduction of new ideas and processes leading to the company's performance requires this group. Given that nearly 90% of businesses in Cameroon are very small and have only one owner/manager at their top, the measurement of business diversity based solely on the company's executives has a major limitation. We will therefore measure the actual diversity of the company, which takes into account not only the management structure but also and above all the diversity of the employed staff.

Unlike developed countries, Cameroon, like most countries in the South, is characterized by a high level of cultural diversity. However, apart from the flows of immigrants that the host country receives each year, Cameroon is witnessing the coexistence of several ethnic, linguistic and religious groups. By splitting the cultural diversity variable into three components, the equation becomes:

$$D_e = \alpha_0 + \beta_1 DIVeth_e + \beta_2 DIVling_e + \beta_3 DIVrel_e + \sum_{k=1}^{K} \lambda_k ent_e + \sum_{l=1}^{L} \gamma_l ter_e + \varepsilon_e$$

Ethnic diversity is considered as the probability that two individuals (employee, manager, owner) randomly selected in the company belong to two different ethnic groups.

$$DIV_j^{ethn} = 1 - \sum_{r=1}^{R} S_{rj}^2$$

where S is the proportion of the employees (owner, manager and simple employee) of company j who are of ethnic origin r. Thus, r = Bantu, Semi-bantu, Sudanese, hence R=3.

Similarly, linguistic diversity is considered as the probability that two individuals randomly selected in the company (owner, manager, employee) speak two different languages.

$$DIV_j^{ling} = 1 - \sum_{k=1}^{K} S_{kj}^2$$

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where S is the proportion of employees (owner, manager and simple employee) of company j who speak the language k. Thus k= English, French hence K= 2.

Similarly, religious diversity is defined by the probability that two people randomly selected from the company (owner, manager and simple employee) belong to two different religions.

$$DIV_j^{relig} = 1 - \sum_{h=1}^{H} S_{hj}^2$$

where S is the proportion of the staff (owner, manager and simple employee) of company j who are the religious affiliation h. Thus, h = Catholic, Protestant, Muslim, other, hence H = 4.

Referring to the work of Peteraf (1993) and Grinstein (2008), the control variables related to the company are the age of the promoter (*tap*), the education level of the promoter or manager (*nip*), the attitude of the promoter and/or manager towards risk *(ris), the* size of the company (*tai*), the business sector the company (*sa*), the legal form of the company (*fj*), the use of ICT (*tic*), the source of financing *(sf)*. The control variable related to the territory is mainly the level of corruption (*corr*). The existing literature justifies the introduction of age into the model by the fact that older individuals often have more experience in good business management. Educational attainment is included in the model to reinforce Becker's (1975) idea that education has an effect on an individual's career orientation.

According to Kihlstrom and Laffont (1979), the least risk-averse individuals become entrepreneurs and digest the largest firms. Thus, the attitude towards risk must be included in the model. The need to include firm size, legal form and sector of activity is justified by the generally accepted view that large industrial firms are able to achieve economies of scale, have better access to financial markets (Titman and Wessels, 1988) and are better able to prevent new entrants from operating in the market (Maças Nunes et al., 2009), which could facilitate their sustainability. ICT is included in the model to reinforce Koellinger's (2005) idea that the use of ICT leads to efficiency gains resulting from reduced transaction costs, improved business processes, better coordination with suppliers and increased diversification. According to Amore et al. (2013), financial development, as reflected in the openness of the financial system to transactions, is essential for corporate performance. Therefore, the source of finance can be included in the model. To control for unobserved heterogeneity in economic structure and institutional quality, we introduced the corruption variable. Thus the final equation to be estimated becomes:

$$\begin{aligned} D_e = {} & \alpha_0 + \beta_1 DIVeth_e + \beta_2 DIVling_e + \beta_3 DIVrel_e + \lambda_1 agp_e + \lambda_2 nip_e \\ & + \lambda_3 ris_e + \lambda_4 tai_e + \lambda_5 sa_e + \lambda_6 fj_e + \lambda_7 tic_e + \lambda_8 sf_e + \gamma coor_e + \varepsilon_e \end{aligned}$$

ECONOMETRIC RESULTS

Reading the table below, the authors found that the model explains nearly 33% of the variability of cultural diversity in relation to the sustainability of companies. The results of these estimates also show that the company's sustainability model is globally significant at the 1% threshold (Prob>chi2 = 0.0000 < 0.01).

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They note the significance of one of the variables related to cultural diversity. This is linguistic diversity. However, if we vary linguistic diversity from zero to low, then the duration of the company will increase by 30.89 months. Although the coefficient assigned to the high level is insignificant, it is consistently negative, which means that a high level of linguistic diversity contributes to reducing the duration of a company. Thus, the relationship between linguistic diversity and the company's sustainability is in the form of an inverted U. Therefore, the more linguistic diversity increases within a company, the more it tends to be a long-term business, but there is a maximum level of linguistic diversity where exceeding this level would rather contribute to a reduction in the lifespan of the company. This could be explained by the fact that linguistic diversity provides a wide range of networks that the company could use to easily access more information, more credit and more labour. However, interactions between individuals from different backgrounds also involve costs associated with creating an environment that ensures cooperation, which can reduce business performance in terms of time.

Although ethnic diversity is not significant, the authors find the signs attributed to its coefficients to be all positive. This means that when a company is ethnically diversified, it is more likely to be sustainable. This result can be justified with Fainstein's (2005) argument that ethnic diversity attracts multiple forms of human capital and undoubtedly encourages creativity, technological and scientific innovation and also the competitiveness of companies. Concerning religious diversity, though not significant, whatever its level, it has a negative impact on the sustainability of Cameroonian companies.

The age of the promoter or manager also plays a significant role in explaining the duration of the business. However, if we vary age of the promoter and/or manager of a certain age group, for example, from [18-29] age group to the [30-44] age group, then the duration of the business increases by 22.87 months or for the [18-29 year old] tranche for the [45 year old and over] tranche, then the duration of the business will increase by 76.38 months. The authors therefore note that, as the age of the promoter and/or manager increases, the company tends to become more sustainable. They used Arrow's (1962) idea that experience is acquired through learning over time to explain this result. Additionally, the authors' result could be explained by the fact that, as the individual's age increases, he or she has more opportunities to acquire more management experience, which will fully contribute to the objectives of cost minimization or profit maximization while satisfying customer desires. This could make the company more efficient and therefore leads to longevity.

The level of education of the promoter or manager also plays a significant role in explaining the company's sustainability. However, when the educational level of the promoter or manager increases lightly, for example from primary to secondary level, then the duration of the company will tend to decrease by 23.82 months. Similarly, when the promoter's or manager's level of education moves from primary to secondary level, the duration of the company will tend to decrease by 29.38 months. Thus, the higher the level of education, the more the duration of the enterprise tends to decrease. One of the reasons for this ambiguous result on the relationship between educational level and longevity of the firm is the existence of firm-specific characteristics that can determine its longevity.

The attitude of the promoter or manager towards risk also has a significant influence on the company's sustainability. If the company's promoter or manager slightly changes his attitude towards risk, for example from a risk-averse attitude to a risk-loving attitude, then the company's duration increases by 21.81 months. However, the less risk-averse the promoter or manager is, the more likely his company will tend to besustainable. This could be explained by the fact that individuals who are less risk-averse are much more likely to explore certain identified opportunities. These opportunities could then contribute to the company's longevity.

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The last variable that significantly determines longevity is the size of the company. However, the authors' results show that if a company that employs five or fewer individuals increases its workforce to employ more than five individuals, then its duration will increase by 21.68 months. Thus, the duration of a large company is slightly longer than that of a small company. The role of size in explaining the longevity of the company can be supported by the ideas of Jelic et al (2001), which highlight the importance of economies of scale. Baumol (1967) also supports the advantages of market power. Thus, large companies, because of their better access to resources, increased market power and economies of scale, seem to be able to generate stronger competitiveness, which may contribute to their longevity.

Table 1. Effects of variables on the duration of firms

Variables	Duration of business
Ethnic diversity (E) Null *(DIV=0)* Low *(0<DIV<0.5)* High *(DIV>=0.5)*	Ref 18,41(11,50) 5,800(12,89)
Linguistic diversity (E) Null *(DIV=0)* Low *(0<DIV<0.5)* High *(DIV>=0)*	Ref 30,89(16,65)* -4,639(14,88)
Religious diversity (E) Null *(DIV=0)* Low *(0<DIV<0.5)* High *(DIV>=0.5)*	Ref -8,804(9,833) -1,026(12,72)
Age group [18 years -29 years] [30y-44 years old] [45 years old and over [	Ref 22,87(10,27)** 76,38(13,45)***
Educational level At most primary Secondary school Higher	Ref -23,82(11,90)** -29,38(13,12)**
Attitude to risk Averse Neutral Loving	Ref 2,252(11,22) 21,81(11,76)*
Corruption None or low High	Ref 4,800(8,768)
Size of the company Maximum 5 employees More than 5 employees	Ref 21,68(12,73)*
Sector of activity Commercial None-commercial	Ref -12,17(8,595)
Legal form Sole proprietorship Others	Ref -0,169(10,95)
ICTS None use of ICTs Use of ICTs	Ref 6,501(9,652)
Source of funding Own capital Other sources	Ref 5,578(9,132)
	Prob> chi2 000000
	Pseudo R^2 0.330

Source: Author's estimate. (***), (**) and (*) respectively represent the significance at 1%,

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CONCLUSION

The objective of this study was to highlight the effects of ethnic, religious and linguistic diversity on the sustainability of businesses in Cameroon. To achieve this objective, the authors used data collected from 504 individuals in the towns of Douala and Yaoundé by the Laboratory for Research in Fundamental and Applied Economics (LAREFA) of University of Dschang. These authors used the censored Tobit model and, following this methodological approach, the following results were obtained. Linguistic diversity significantly determines the sustainability of companies in Cameroon. However, if we vary linguistic diversity from zero to low, then the duration of the company will increase by 30, 89 months. Although the coefficient assigned to the high level is insignificant, it is consistently negative, which means that a high level of linguistic diversity contributes to reducing the duration of a company. Although ethnic diversity is not significant, the authors find that the signs attributed to its coefficients are all positive. This means that when a company is ethnically diversified, it is more likely to be sustainabel. Concerning religious diversity, although not significant, whatever its level, it has a negative impact on the sustainability of Cameroonian companies.

Following these results, some recommendations can be made: i) Given that linguistic diversity and ethnic diversity have a positive impact on the sustainability of companies in Cameroon, the authors argued for a relaxation of xenophobia tendencies at the entry level. ii) Given that religious diversity does not favour the sustainability of Cameroonian companies, the authors argued for an improvement in political and economic institutions because it could transform the negative social strength of religious diversity into a productive strength.

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Chapter 56
Measuring the Different Facets of Diversity Using Quantitative Methods

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ABSTRACT

The aim of this chapter is to provide quantitative techniques and guidance for analyzing different problems related to the measurement of diversity and inclusion practices present in organizations. The example of only one dimension of diversity; viz Gender diversity is given in this chapter. However, these Quantitative tools can be used to explore other facets of diversity as well. In this way, this chapter shall seek to provide a basic understanding of how to analyze and study the data collected for research on Diversity and Inclusion practices in organizations.

INTRODUCTION

A wise scholar has said, "Research consists in seeing what everyone else has seen but thinking what no one else has thought."

Research is a continuous and rigorous process to study a particular topic as meticulously as possible. It calls for inquisitiveness, perseverance, commitment and hard work for a quite a number of years. The decision to start on this difficult journey should be made after careful consideration. A good institution and the support of its research community, matter a lot in this journey.

Mostly this chapter will adhere to University level students or doctoral scholars who have embarked on their research journey. However, researchers affiliated with different organizations too can benefit from the methodology described here.

The chapter shall deal with quantitative methods to measure different facets of diversity. Throughout the chapter, as an example, a study conducted by a researcher on gender diversity and the glass ceiling phenomenon in organizations shall be highlighted. This example shall help readers to understand better, the different statistical methods that can be used to conduct research on diversity.

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Gender Diversity is a dimension of workplace diversity, which we shall be taking as an example in our chapter. Similarly, other dimensions of diversity too can be researched and analyzed using the tools given in the chapter. With the help of these methodologies and tools, researchers need to find their own unique approach to the study of management of diversity or analysis of diversity dimensions in an organization.

The layout of the chapter is as follows. In the first section, a general introduction to the chapter is given; in the second and third section, the topic of workforce diversity is explained with special emphasis on gender diversity in the workforce; in the fourth section, the researcher's induction into the research journey is highlighted; the third section talks about framing the research question and identification of the research population. The fourth section talks about how to approach research on diversity. The fifth section talks about framing the research Question and formulating the hypothesis. The sixth section discusses identification of the population while the seventh section talks about the different Sampling Methods that are used by researchers. The eighth section, follows up on this, by discussing data collection tools and techniques and the ninth section talks about ways to frame a basic questionnaire. The tenth section talks about certain basic quantitative methodology to analyze the collected data and the eleventh section takes this further by touching upon the different parametric and non-parametric tests used by researchers in their studies. Finally, the twelfth section sums it all up by providing a guideline on how to write the complete research report on the study conducted. Through these different sections, this chapter tries to give an overall view of some of the quantitative methods that may be used for analyzing research data on diversity.

WORKFORCE DIVERSITY

What Is Diversity?

In simple words, diversity is the individual quality which differentiates a person or group from others around them. Some of these differences like race, gender and age may be visible and distinguishable among different individuals while some others like educational levels, sexual orientation, opinions, beliefs, etc. may be invisible. Cox (1993) defines diversity as "a mix of people in one social system who have distinctly different, socially relevant group affiliations." Other researchers have defined diversity as organizational efforts which don't focus on any one particular group but rather on all employees for the overall benefit of the organization (Fraser-Blunt, 2003). Researchers like Hill, Lorbiecki and Jack and Mor Barak define diversity as efforts which move beyond tolerance to celebration of a heterogeneous workforce in an organization. According to them, diversity exists not because some groups are underrepresented but rather for celebrating plurality of the heterogeneous workforce so that everyone must be included while at the same time honoring the 'difference' that exists among individuals (Hill, 2009; Lorbiecki and Jack, 2000; Mor Barak, 2000)

Workforce diversity is considered to be extremely important in today's world. Researchers have pointed out that diversity helps an organization to increase acquisition of resources and marketing, creativity, problem solving and flexibility (Cox and Blake, 1991). Research on diversity has also found that having a workforce that is culturally diverse can help organizations make better quality decisions (Cox, 1994; McLeod et al., 1996), help to improve performance in an organization (Leonard et al., 2004) and lead to an increase in organizational creativity (Jackson, 1992). Due to all these benefits, organizations

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today are aggressively supporting and promoting different dimensions of diversity in the workplace, including gender diversity.

Certain researchers advocate the origin of diversity as a topic of organizational studies to the US (e.g. Ashkanasy et al., 2002; Ivancevich and Gilbert, 2000; Lorbiecki and Jack, 2000; Lorbiecki, 2001). In the year 1964 in the US, the civil rights act was enacted. This act made it illegal for US companies to discriminate on the basis of race, color, religion, sex or nationality. Similarly the EEOC (Equal Employment Opportunity Commission) and other acts such as the Age Discrimination in Employment Act of 1967, the Rehabilitation Act of 1973, the American with Disabilities (ADA) Act of 1990 and the ADA Amendment Act of 2008 all guaranteed the protection of worker's rights at the workplace, and prohibited discrimination so as to create a culture of diversity at the workplace.

Researchers advocating diversity have suggested that organizations needed to break away from their narrow definition of equal representation in employment as propagated by affirmative action programs and instead use broader concepts that capture individual differences and celebrated all the ways in which people can differ (Mor Barak, 2000)

Diversity as a term got impetus in the management discussion in the 1987 Hudson Institute report, 'Workforce 2000' (Ivancevich and Gilbert, 2000; Lorbiecki and Jack, 2000). This report predicted that the US workforce was going to get extremely diverse as women, blacks and Hispanics would make up about 85 percent of the workforce by the year 2000. Although this report was not accepted by the entire research community, it had given birth to the idea that the US workforce would soon be a heterogeneous one. In fact, researchers began to predict with the advent of the US economy more and more individuals would soon find themselves working with people who were demographically different from them in age, race, ethnicity, etc (Tsui et al., 1992). By the late 1970s and early 1980s, private companies in the US even began to realize that the legal mandates were not enough to effectively manage diversity in organizations and they themselves began to offer training and evaluation programs for promoting and managing diversity in the US workforce (Herring, 2009). It was also during this period that researchers started to suggest the different benefits that diversity provided to organizations. This included the ability to retain and attract the best talent in the market, reduced costs due to lower turnover and fewer lawsuits, increased market understanding and marketing ability, increased innovation, increased problem-solving and idea generation, better decision making, and better overall performance. (Cox, 1993; Cox and Blake, 1991; Cox, 1991). Due to these varied benefits, organizations in the US started making diversity a part of their internal DNA so as to keep themselves abreast in the changing global economy.

A Note on Diversity Policies in India

India is a founding member of the ILO and has been a permanent member of the ILO governing body since 1922. The establishment of the International Labour Organization in 1919, its conventions and recommendations, influenced considerably the labor laws which were formulated in India. Consequently, laws were passed which not only regulated the hours of work but also contained provisions for health, safety, welfare and equal treatment of workers irrespective of gender, race, religion, etc.

The Constitution of India also supports and promotes equality in the workplace. The term diversity, when used in the Indian context mostly, encompasses regional, linguistic, religious, cultural, socio-economic status and educational diversity as compared to diversity as understood in the western context which includes other dimensions like race, gender identity, gender choice, etc. One of the approaches that the Indian government has taken for managing diversity in its workforce was to give 'reservation'

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quotas to its historically discriminated groups, the Scheduled Castes (SCs), the Scheduled Tribes (STs) and the Other Backward Castes (OBCs).

India is a booming economy with a big middle-class population having a high spending potential. It is a very attractive destination for foreign investors from all over the world. Many multinational companies have opened operations in India. They have brought along different ethnocentric diversity assumptions of their host country culture into the Indian workplace (Nishi and Ozbilgin, 2007). MNCs have also brought more awareness to the diversity aspects like gender diversity, age diversity, LGBT diversity, etc., in their Indian operations. Indian employees have assimilated these western perspectives of diversity into their eastern values of equality and fraternity (Cooke and Saini, 2010). Thus, with the phenomenal growth of the Indian market and the globalization of the Indian workplace, 'diversity' has also become an important part of the Indian workforce.

GENDER DIVERSITY

WHO or the World Health Organization defines "gender" to be "the socially constructed characteristics of women and men – such as the norms, roles, and relationships that exist between them." Gender roles are "the set of arrangements by which a society transforms biological sexuality into products of human activity, and in which these transformed needs are satisfied" (Reiter, 1975). In other words, society sets some expectations and standards which influence the work done by each sex. Women do certain activities based on their gender while men do some other activities based on the fact that they are men. Having gender diversity in the workforce means that both men and women in the workforce will have equal work opportunities, compensation, growth options, and fairness in the organization

According to Kochan et al., 2003, women need to be provided equal job opportunities in the workplace as it helps in improving the performance of employees in an organization. Furthermore, a study by Wentling and Palma Rivas (2000) shows how organizations that have diversity in their workforce provide better services to their customers because they can understand their customers better. Certain other studies have talked about how hiring woman employees will help organizations tap niche markets globally (Kundu, 2003). Professor Klaus Schwab, Founder and Executive Chairman of the World Economic Forum (WEF, 2010) has said that women constitute approximately one-half of the potential talent base throughout the world and therefore, over time a nation's competitiveness in the global forum will depend on how much it educates and utilizes its female talent in the workforce.

As more and more women enter the workplace, organizations have started embracing diversity and inclusion practices to create a gender-neutral workspace. However, women are still largely under-represented and undervalued at work. Across managerial levels, they are inequitably employed and face discrimination. Women face a number of workplace barriers which cause many of them to take career breaks or leave their jobs. These barriers also become a deterrent to other women who seek to join the workforce. At the same time, different initiatives have been taken up by organizations to make the workplace more gender inclusive. In the ideal inclusive workplace, all employees would feel valued rather than just being represented. Such an organization would have fairness and equal opportunities for all its employees.

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A Note on Gender Diversity and Equality Policies in the Indian Workplace

Article 39 of the Directive Principles of State Policy states that all citizens, men or women, have the right to an adequate means of livelihood while article 42 of the directive principles of state policy state that the state shall make provisions for just and humane conditions of work and maternity relief. Keeping these principles in mind, the government of India formulated the following acts for the working women in Indian organizations.

The Equal Remuneration Act which was passed in 1976, emphasized that men and women shall be paid equally for equal work done by them and that no discrimination shall happen in the workplace based on gender, physical ability, caste, religion, etc except where employment of women is prohibited or restricted by the law. The government also passed the Equal Opportunities, Protection of Rights and Full Participation Act in 1995 for equal treatment of all workers, including women, employed in an organization. Similarly, the Maternity Benefits Act passed in 1961 and amended again in 2008 and recently in 2016, provides all women employees with a maternity leave of 26 weeks and certain other benefits which have made a better place for the working mother in the Indian workforce. All these laws and acts are regularly monitored by the Central Ministry of Labour and Central Advisory Committee of the Government of India.

For safety of women at the workplace, the historical case of the supreme court of India (Hon'ble Supreme Court in Vishaka and Others Vs. State of Rajasthan and Others (JT 1997 (7) SC 384)) held that the sexual harassment of women in the workplace amounts to violation of the rights of Gender Equality and should be punishable by law. In the year 2013, the Sexual Harassment of Women at the Workplace (Prevention, Prohibition, and Redressal) Act, was passed which created a safer and more secure workplace for the working women in the Indian workforce. All these acts are constantly evolving and becoming more flexible and diverse with the changing times and the changing role of women in the modern Indian economy.

Now that we have provided a brief idea about the field of workplace diversity and of gender diversity, in particular, let us look at how a researcher shall begin her journey, be it in the field of gender diversity or any other diversity dimension of her choice. Starting with deciding on a research question to conducting a survey to collecting and analyzing the data and finally making a report using quantitative methodology, this chapter shall explain the different steps that are involved in the journey to conducting a good research.

DOING RESEARCH ON DIVERSITY

Once the course work had finished, scholars should totally concentrate on reading and broadening their spectrum. They should try to read various articles, books, blogs, dissertations, magazines, etc., related to their area of interest. These books and articles will help researchers in all the steps of their research journey. They say books are a student's best friend. In this Ph.D. journey, books shall certainly be one's best friend and reading is certainly the best exercise one can do.

The first step in this journey is to find a topic of interest. Choosing a topic ought to be one's own decision as otherwise, it will lead to a lack of motivation in the long run. It is recommended to read extensively and identify a topic of interest which is important to the researcher and which she can be passionate about. Identifying a potential supervisor and writing a research proposal usually comes next.

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Usually, students choose supervisors among those who have worked previously in this field or who have an interest in the topic of choice. In certain cases, students correspond with their guides well in advance and enter the Ph.D. program at a certain University with the topic and guide in mind.

Reading is an exercise which needs to be continuously taking place during the research program. Some supervisors might insist on a research proposal before they agree to work with you. Keep in mind while submitting the research proposal, that it should not be overly ambitious or impractical. Often a considerable time is spent in writing a research proposal and then it might need to be altered completely or at least funneled down to reduce the scope. The research proposal should refer to a subject, the scope of which is neither too broad nor too narrow so that the work can be completed within the typical time-frame of a doctoral program, that is, around 3-4 years.

Once the supervisor has been fixed and a broad reading of the literature in your field of interest is done, the next crucial task is to find out the research question. It needs an enormous study on the area of interest along with a considerable amount of time to find a gap in the existing literature. Many books and articles from different sources have to be read and a thorough review needs to be done by devoting sufficient time before deciding the research question. Students may first start with a rough notion about a researchable topic, based on their educational background, personal and professional experience and personal interest in that area. Next, they may explore a variety of sources to understand the broad area and develop the research question. They may also need to write a complete review of the literature in their field and show how they have developed the research question from gaps left in the literature. Some universities insist on the literature review as part of the doctoral coursework, others do not. But ultimately, doing a review of the literature is beneficial as it helps researchers be aware of the past and present debates concerning their research area.

Students should attend all kinds of seminars and workshops, along with University coursework during this period. The most important characteristic that should be present in a scholar is patience and readiness towards new possibilities. Also, scholars need to be innovative and tentative towards every possible aspect of the journey. Research is a process of personal growth where scholars need to be open-minded enough to welcome unexpected results.

Reading, writing, listening, and thinking constitutes important skill areas for early-career researchers to develop. The importance of reading has already been highlighted in the chapter. Writing stimulates thinking, imagination, and learning and helps the researcher pen down her thoughts on paper. Moreover, academic writing needs intensive practice and it is only by trying again and again that students can become good academic writers. The skills of listening are known to be important in any form of communication. It assumes importance in research because communication is involved in many stages of the research process. Hence to be good researchers, we need to be good readers, we need to be good writers and we also need to be good listeners.

It is important for researchers to have and follow a timetable for deadlines in their research work. This timeline should be further revised and updated as they proceed further along the research journey. This timeline helps researchers keep track of the progress that they have made and also keeps them from falling back or procrastinating on their research journey.

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FRAMING THE RESEARCH QUESTION AND FORMULATING THE HYPOTHESIS

Having a broad research area is good as it serves as a starting point for researchers, but specific research questions need to be developed from here. In our example on gender diversity, our student decides to concentrate more on barriers women face in the workplace at upper levels of management after researching on the broad overall topic of gender diversity in organizations. She feels the glass ceiling is a phenomenon she would like to look at. This becomes her research problem. This research problem should have a clear sociological angle and the scope of the research question should not be too broad or too narrow. A few sub-questions need to be framed which the student shall explore in her research journey. In our example, the student may come up with the following research questions with regard to her area of interest on glass ceiling in organizations:

1. Does the glass ceiling exist in organizations? Is it specific to any particular sector?
2. Do women in middle management perceive a glass ceiling at the top?
3. Does this perception of the glass ceiling effect their organizational commitment?
4. Are women leaders in organizations able to cross over to the other side of the glass ceiling?
5. Do these women leaders continue to face such barriers in the top management?
6. Does this crossover effect their organizational commitment?

This may be a broad list of the research questions that the student has thought of. These questions may be more or less, depending on the depth of the subject and the scope of the research.

Another way to approach the research problem is to have a theoretical construct and let the thesis be guided by findings and developments, instead of beginning with a specific hypothesis and trying to prove and disprove it.

The research question should ultimately be such that it helps to make some kind of contribution to the field of study, however big or small.

In statistical data analysis, we first decide on a hypothesis. A hypothesis is a proposition or an assumption which the researcher wants to test through her research. A null hypothesis is a statement that the effect or the relationship that we are looking for is absent. The question that we need to find an answer to, through our research is whether according to the data we have collected and analyzed is the null hypothesis true. If it is true then we reject the alternate hypothesis and if it is false, then we accept the alternate hypothesis.

So, in our example, the null hypothesis would be that the glass ceiling does not exist in the Indian IT sector. We mostly reject the null hypothesis if the confidence level is 95 percent i.e we only reject the null hypothesis if we can be 95 percent sure that the association is a real association, In other words, we can say with 95 percent confidence that the glass ceiling does exist in Indian industries. We call this acceptance of the alternate hypothesis.

There are two types of errors which can be made with regard to acceptance or rejection of the null hypothesis:

Type 1 Error: The null hypothesis is rejected, when in fact it is true
Type 2 Error: The null hypothesis is accepted, when in fact it is untrue.

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IDENTIFICATION OF THE POPULATION

After conducting the literature review and deciding on the research question, we come to the identification of the population. In our example, the student has conducted a literature review on the topic of gender diversity and has formulated her research questions on the glass ceiling in organizations. Now she needs to decide upon the population that she wants to study and decide what sample design should be used to draw a sample from the total population. These two terminologies, the population and the sample may be defined as:

Universe or Population: The total group of people of interest to us whom we wish to study for our research. E.g. All women managers in India.

Sample: A segment of the total population which we have chosen to study for our research purpose. The sample should ideally be representative of the population.

In our example, the researcher might have an in interest in the Indian IT sector as she may have previously worked in that sector or have acquaintances in that sector or may have read literature on the topic which would have created in her an interest to understand whether the glass ceiling is present in Indian IT organizations. So, the total number of women in the Indian IT Industry becomes her population and it is from them that she will draw a sample since it is about them that she wants to draw inferences from her research.

SAMPLING METHODS

It is obviously not possible to administer the research on the entire population because the number of women in the Indian IT Sector is huge. So, a sample needs to be drawn. The sample is a segment or subset of the population.

Non- biased sample or probability sample is when each and every unit in the sample has a known chance of being selected. An example is a simple random sample, which can be likened to something as simple as pulling names out of a box; every article in the sample has an equal and fair chance of getting chosen.

In stratified random sampling, the articles in the population are divided into different clusters and then a simple random sample is drawn out of each stratum. This ensures better representation of each cluster within the population.

Multi-stage sampling is when the researcher goes through different stages of simple random sampling to arrive at the final sample.

Similarly, there are other methods of probability sampling which are preferred by researchers so as to get a non-biased sample for their study. But during research on cross-cultural or diversity management, many researchers prefer to use non-probability sampling.

Non- probability or biased samples are those when one or more parts of the population are favored over others. Examples of biased samples are Convenience samples, Voluntary response sample, Snowball sample etc.

A convenience sample is a sample which is administered by the researcher on people whom the researcher can more easily approach or on participants who are easily accessible; hence it is not a fair sample.

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A voluntary response sample is a sample where people who choose to include themselves in the sample, become part of the sample. People with a strong interest in the research topic will usually respond to such a sample. Hence it is a biased sample.

Snowball sampling is a sampling technique when one study participant participates in the research and then refers another participant for the survey. This participant, in turn, refers another participant for the sample and so on, thus leading to a snowball of respondents. However, since these respondents are all socially connected, they may have some variable in common, which may interfere with the research findings.

Judgmental sampling is when the researcher judges and decides which of the people are to be included in the sample. So, it is up to the judgment of the researcher on who should be part of the sample and hence there is no randomness in the sample.

When samples are not random, there may be a confounding variable which may become a part of the study unintentionally. Thus, these samples may not be a true representative of the population.

Let's say that the student researcher that we are considering in this chapter, conducts her survey and collects data on women managers in Indian IT organizations, by using snowball sampling which is a non-probability sampling method. The student may call up her old colleagues or acquaintances and mail them the questionnaire. Similarly, she may look up women leaders and managers in organizations and mail them the questionnaire. She may then ask these colleagues or acquaintances for contact information of other women managers and forward them the questionnaire. This way her sample size keeps increasing and the depth of her sample also widens.

DATA COLLECTION TECHNIQUE

Data collection can be done in two parts. We can collect primary data or secondary data. Primary data are original sources of data, collected firsthand by the researcher. Secondary sources are when the data has already been collected by some other researcher and we are simply using the data for our research purpose. This can be published and unpublished data. The benefit of secondary data is that they are readily available and do not need to be collected again but the disadvantage may be that they may not help the researcher in their particular research need.

Now that the student has decided on the population and the sampling technique that she will use to reach to her respondents, she needs to decide how she will collect the data. There are a number of ways by which she can do that. She can interview respondents face to face or over the telephone or the internet, send them a questionnaire, observe them in their natural or specified settings or have a focus group interview or discussion. The interview, questionnaire, and other data collection tools may further be structured, unstructured, semi-structured, in depth, etc. Further, the questions may be open-ended, close ended or both. Each of these methods has its own defects and merits and it is up to the researcher to decide what tool is ideal for their research. Two or more methods may be mixed up. There are no hard and fast rules for collecting data. Whatever method is best for your research, should be adopted by you to conduct your study. Neither are there any black and white lines between quantitative and qualitative data analysis. Students may adopt a combination of both in their research to get desirable results. For the purpose of this chapter, we are focusing on quantitative data analysis.

Quantitative Questions used in Questionnaires, Surveys, Interviews, etc., are of three kinds and generate three types of data – Nominal, Ordinal and Continuous. In nominal or category type questions,

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participants choose from two or more options, given to them. For e.g., Questions on Gender (1 for male and 2 for female) or Questions on Ethnic origin (1 for African American and 2 for Indian). In Ordinal type of questions, there is a relationship between the different variables or some kind of order or ranking between them. For e.g., Age (1 for 20-30 years of age, 2 for 30-40 years of age, 3 for 40-50 years of age, 4 for 50-60 years of age). Continuous questions are those which are identified by a number and this number defines the intensity or frequency of a particular occurrence. For e.g., how many women have had promotions in the past three years in your organization?

Designing the Questionnaire

From our continuing example of the scholar who wants to understand whether women managers in organizations, face the glass ceiling and what are the reasons for such barriers, let's have a look at the steps that she takes to design a questionnaire for this purpose.

The researcher needs to decide how the questionnaire shall be administered. For the purpose of our research, and because we want to reach out to a large number of people, we decide to use online questionnaires. The method of administration affects the type of questions that shall be asked and should be decided in light of needs and resources.

Questionnaire structure is very important. A good questionnaire should be interesting, easy to answer and respectful. It should have an informative title and description, so that the respondent knows why the data is being collected and for whom. The questions should be such that through them, we are able to find answers to the research objectives we have in mind.

The questionnaire should always be pre-tested or pilot tested. Focused groups, cognitive interviewing, split ballot experiments, field testing and many other methods exist for pre-testing of the questionnaire and determining its reliability and validity.

Once the questionnaire results are out, these need to be computed. There are two ways of calculating and analyzing the results. One way is using quantitative methodology and the other is using qualitative methodology. In this chapter, we shall be focusing on quantitative methodologies that can be used.

A Sample Questionnaire

This is a sample questionnaire handed out to employees working in different management positions in the IT sector of India:

Name of the Employee:
Gender (1 for Male and 2 for Female): _____
Age (1 for 20-30 years of age; 2 for 31-40 years of age; 3 for 41-50 years of age; 4 for 51-60 years of age; 5 for 61 years and above): _____
Your position in the organization (1 for junior manager; 2 for middle manager; 3 for senior manager; 4 for Senior Executive roles):
Your Salary (1 for below Rs 40,000; 2 for 40,001-70,000; 3 for 70,001 to 1,00,000; 4 for 1,00,001 to 1,30,000; 5 for 1,30,001 to 1,60,000; 6 for 1,60,001 and above)

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Kindly answer questions with a response from 1 to 5

1 – Strongly agree
2 – Agree
3 – Neutral
4 – Disagree
5 – Strongly disagree

1. Women and men are equally respected in my workplace: _____
2. Women and men are rewarded/ promoted based on their performance, in my workplace: _____
3. An employee who can travel for work and work on weekends or night shifts, when required has a better chance for promotion in my organization: _____
4. Women must perform better than a man to be promoted in my organization _____
5. There are sufficient opportunities in my organization for women to advance into leadership roles _____
6. In my organization, women are usually employed in support roles _____
7. Men have their own networks at work which limit a woman's chances of growing in the organization _____
8. Sufficient guidance and mentorship is given to women who are trying to move up the corporate ladder in my organization _____
9. In my organization, there are a number of women leaders who are inspirations to the other women in the workplace _____
10. My organization inculcates a sense of diversity and inclusion in the workforce culture by regular diversity awareness seminars, diversity and inclusion workshops, training and/or other methods _____

ANALYSIS OF DATA

When talking about statistics, we refer to two types - Descriptive and Inferential.

Descriptive Statistics: Statistics which describe the sample or summarize it. An example would be if we say that 85% of the population agrees that glass ceilings exist in organizations. This would be descriptive statistics since this is a fact which is describing the population.

Inferential Statistics: Statistics which make inferences about the larger population using the results of the sample data given. Inferential statistics uses statistical analysis and interpretation to infer the data. Statistical tests and significance tests are then used to check the degree to which we can rely on the sample to make inferences about the population

For a quantitative study, we need to further summarize and describe the responses that have been generated through our research. For category type and ordinal type questions, like gender and age, we can count the number of responses and determine their frequencies. Further by using percentages, bar charts, and pie charts, we can report our findings. For eg, in our research, we shall count the frequency of the employees who are females (for the nominal variable of gender) or frequency of women who are above 30 years of age in the organizations (for the ordinal variable of age), and represent them via pie charts or bar graphs in the analysis.

Let's say from our questionnaire, we collect data which looks like that shown in Table 1.

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Table 1.

Gender	Age	Salary per Month
Male	35	40,000
Female	28	32,000
Female	32	38,000
Female	36	38,000

For representation of continuous data, however, we can use measures of central tendency. In day to day language, this is called average or more academically – the mean, the median, and the mode. For example, if we want to understand what is the average earnings of a woman in a particular organization, we should find out the mean of the group of women working in the organization. This figure would then give us an idea about the average earnings of a woman working in that organization.

The formula for the mean is

$$\text{Mean, } \overline{x} = \frac{\sum x}{n}$$

So in our example, the average salary of the woman would be 32000+38000+38000 = 108000 and we will divide this by the number of woman i.e. 3. Hence the mean salary for a woman in the organization would be 36000.

If we want to understand the distribution or dispersion of the salary in this group of women, we would have to find out the range of their salaries. This can be done by simply subtracting the largest salary amount from the smallest one, i.e., finding the difference between the smallest and the largest responses. Similarly, we can also use the standard deviation method, to get a more accurate idea of the dispersion. In our example, the range of the salary for women would be 38000-32000 = 6000

Variance is a measure of how spread out is the distribution. It gives an indication of how close an individual observation clusters about the mean value. The variance of a population is defined by the following formula:

$$\sigma^2 = \sum \left[x_i - x\right]^2 \Big/ N$$

where σ^2 is the population variance, x is the population mean, x_i is the i^{th} element from the population mean and N is the number of elements in the population. The variance of a sample is defined by a slightly different formula:

$$s^2 = \sum \left[x_i - x\right]^2 \Big/ n - 1$$

$$s = \sqrt{\left(\sum \left[x_i - x\right]^2 \Big/ n - 1\right)}$$

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where s^2 is the sample variance, x is the sample mean, x_i is the i^{th} element from the sample and n is the number of elements in the sample. The formula for the variance of a population has the value '*n*' as the denominator. The expression *'n−1'* is known as the degrees of freedom and is one less than the number of parameters. Each observation is free to vary, except the last one which must be a defined value. The variance is measured in squared units.

All this looks too complicated, so let's understand with the help of our example. As per our example, the average salary of the women in the organization is 36000.

Now the next step is taking every value that we have, subtract it from the mean, square the result and add all such results formed. So as per our example, the equation would look like

(32000-36000)^2+(38000-36000)^2+(38000-36000)^2

4000^2+2000^2+2000^2

16000000+4000000+4000000 = 24000000

24000000 /2 (3-1) = 12000000

To make the interpretation of the data simple and to retain the basic unit of observation, the square root of the variance is used. The square root of the variance is the standard deviation (SD). The SD of a population is defined by the following formula:

$$\sigma^2 = \frac{\Sigma\left(X_i - X\right)^2}{N}$$

$$\sigma = \sqrt{\Sigma\left[x_i - x\right]^2 \Big/ N}$$

where σ is the population Standard Deviation, x is the population mean, x_i is the i^{th} element from the population and *N* is the number of elements in the population. The Standard Deviation of a sample is defined by a slightly different formula:

$$s = \sqrt{\Sigma\left[x_i - x\right]^2 \Big/ n - 1}$$

where *s* is the sample Standard Deviation, *x* is the sample mean, x_i is the i^{th} element from the sample and *n* is the number of elements in the sample.

Hence the standard deviation of our sample is simply the square root of the variance of the sample calculated i.e. the square root of 12000000 which is 3464.10162

All these statistical methods are called univariate i.e. dealing with a single variable. This is because they look at only one question or variable at a time. A univariate is an individual fact about one particular data group. It simply states a fact about the sample, there is little to contextualize that fact or draw

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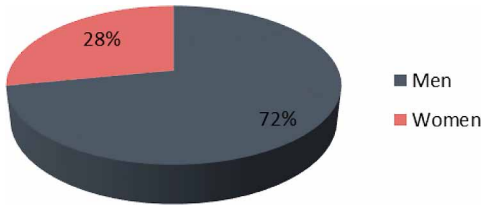
inferences from it. For e.g. 320 women managers have been promoted last year in the organization. This is an example of univariate data.

A more useful way of looking at descriptive statistics is to look at two or more variables at a time. This is called bivariate analysis of data and it allows us to draw some hypothesis or conclusion and infer some kind of relationship between these variables. Bivariate analysis helps us to explore whether the variation in one variable brings about any significant change in the other variable. For e.g. if the number of men who got promoted last year was 640 and the number of women who got promoted was 320, then we can say that the number of men who got promoted last year was double of the number of women who got promoted.

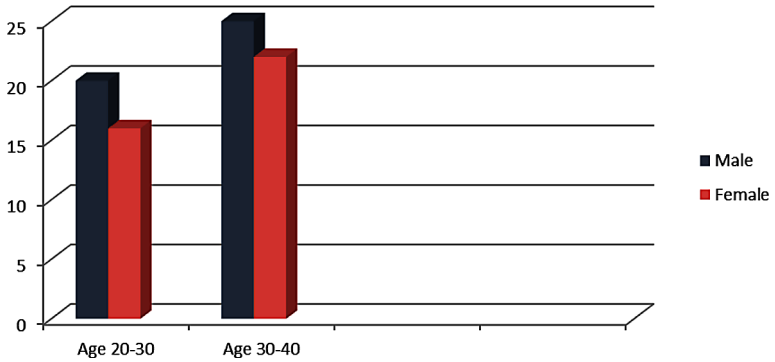
When Bivariate data is represented graphically, like a pie chart or a bar graph, they show a picture of how much the two variables differ. Such a representation can be very insightful and important. For e.g., a bar graph or pie chart showing how many more men are in top management positions when compared to women in top positions, shows the glass ceiling phenomenon being exhibited at higher rungs of the management.

Figure 1. Management representation



In bivariate analysis, we look at pairs of questions and find how they interact or are different from each other. For e.g., we may find out how the nominal and ordinal data of age and gender are related to each other in the data that we have collected. Through bivariate analysis, we can find out the number of individuals in the bracket of age 30-40 who are females. A stacked bar chart helps to graphically present this data.

Figure 2. Stacked bar chart of management representation



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Similarly, bivariate analysis can be used to find the relationship between a nominal and continuous data, for e.g. we may try to find how many individuals who have had any promotions in the last five years are women. In statistical terms, this is simply a comparison of means of the two kinds of data. We first divide our questionnaire into two parts - male and female, then we calculate the mean and standard deviation of people who got promoted in the last five years, for just the data of females. Then we compare the mean and standard deviation of the people who got promoted in the last five years for just the data of males and then we compare these results. This helps us to understand the relationship between the two variables.

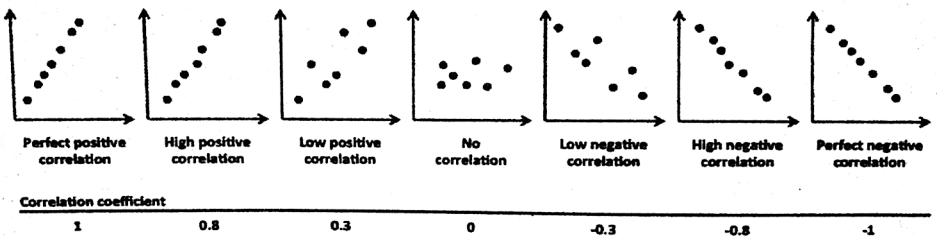
Coefficient Correlation

However just showing variables side by side, only shows that there is an association between 2 variables, it doesn't tell us the strength of that association. If we need to understand the intensity of that association, there are a number of statistical tools which we shall need to apply. A way to understand this strength is to go for correlation. Correlation is a measure of the strength and direction of association between two variables. When measuring correlation, we use a correlation coefficient, most commonly known as R or r. This correlation coefficient will always be on a scale from -1 to +1 with 0 in the middle showing no association. -1 is a perfect negative correlation and +1 is a perfect positive correlation. An easy way to demonstrate correlation graphically is to use a scatter plot. This places one variable on each axis and visually demonstrates the relationship between the two. Strong positive correlation means that as one variable increases, the other increases in the same way. Strong negative correlation means that as one variable increases, the other decreases. The nearer to zero lies the coefficient, the lesser the relationship between the two variables.

An example would be finding the correlation between organizations which have women in higher positions and organizations which have gender diverse policies at work. It may be seen from our analysis that there is a strong correlation between organizations which have gender diverse policies and organizations who have women leaders in top management i.e (a value close to +1). This shall help in making correct inferences about the association between these two variables.

The line of best fit is a straight line drawn through the center of a group of data points plotted on the scatter plot. The steepness of the line indicates the strength of the relationship between the variables and the direction of the line indicates, whether it is a positive or negative correlation. Correlation doesn't however always imply cause and effect. There may be a third variable which may be related to these two variables and which may be the reason for the effect. Similarly, through correlation, we are not able to know the direction of causality i.e which variable is causing the change in the other.

Figure 3. Correlation



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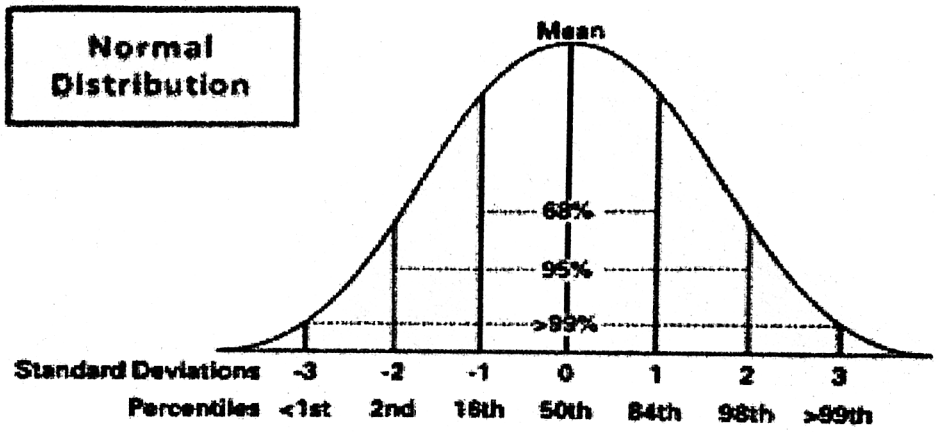
The level of significance is the confidence level which is required to make sure that the findings can be generalized to the population. Usually, 95 percent confidence level is preferred for scientific studies i.e. one should have 95 percent credibility in their research findings.

What Is Normal Distribution?

Most variables usually cluster around a single central value, with either positive or negative deviation from that value. The standard normal distribution curve is a symmetrical bell-shaped curve. In a simple normal distribution, 68 percent of the scores are within one standard deviation of the mean, 95 percent of the scores are within 2 standard deviations of the mean and 99 percent of the scores are within 3 standard deviations of the mean.

Figure 4. Normal distribution



What Is a Skewed Distribution?

A skewed distribution happens when the data collected is asymmetric about the mean or central value. If most of the data fall to the right of the central value, then it is a negatively skewed distribution having a longer left tail. On the other hand, if most of the values fall to the left of the central value, then it is a positively skewed distribution with a longer right tail.

Probability is a measure which states how likely it is that an event will occur. Probability is quantified as a number between 0 and 1 (0 indicates that the chances of the event occurring is impossible and 1 indicates that the chances of the event occurring is certain). The numerical value between 0 and 1 is called the *P* value or calculated probability.

This *P* value helps researchers to reject or accept the null hypothesis. If the P value is less than the significant level, the null hypothesis is rejected else it is accepted.

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Figure 5. Skewed distribution

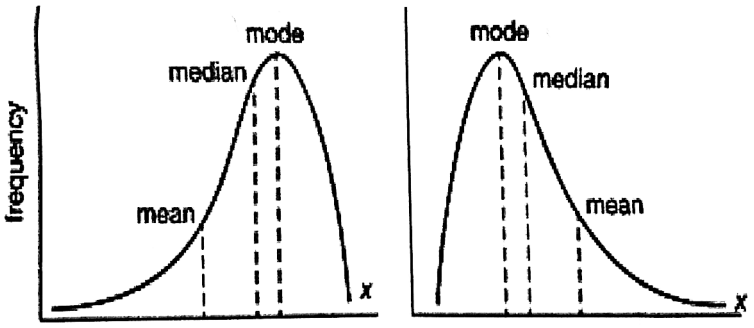

Table 2.

P value	Result	Null Hypothesis (H0)
< 0.01	Highly Significant	Reject H0
>= 0.01 but <0.05	Significant	Reject H0
>= 0.05	Not Significant	Do not reject H0

PARAMETRIC AND NON-PARAMETRIC TESTS

Parametric tests are those that assume that the data to be analyzed is on a numerical scale with a normal distribution. All variables collected have the same variance i.e., they there is homogeneity in them. The sample is randomly drawn from the population and observations within the sample are independent of each other. In those conditions, parametric tests are used.

Here we consider two most commonly used parametric tests, T-Test, and ANOVA.

T-Test

The t-test is used to test the mean value between two groups. There are three types of T-Test:

One Sample T-Test

One sample T-Test is used to check if the sample means differ significantly from the population mean.

The formula for one sample *t*-test is

$$t = \frac{X - U}{sE}$$

where X = sample mean, u = population mean and SE = standard error of mean

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Unpaired T-Test

The unpaired T-Test is used to test whether the population means of two different and independent populations differ significantly from each other.

The formula for unpaired *t*-test is:

$$t = \frac{x_1 - x_2}{sE_{x_i - x_2}}$$

where $X_1 - X_2$ is the difference between the means of the two groups and SE denotes the standard error of the difference.

Paired T-Test

Paired T-test is used to test whether the population means estimated by two dependent samples differ significantly from each other.

Usually, a situation where a paired T-Test would be used is when measurements made on the same subject both before and after a particular phenomenon are compared.

The formula for paired *t*-test is:

$$t = \frac{d}{sE_d}$$

where *d* is the mean difference and SE denotes the standard error of this difference.

ANOVA (Analysis of Variance)

The T-Test cannot be used for comparison of more than two groups. Anova helps to compare the means of two or more groups and find any significant differences.

In ANOVA two group variances are studied – between group variability and within group variability.

The within group variability, known as the error variance, is a variation that cannot be accounted for in the study design. It is based on random differences present in the sample.

The between-group variance or the effect variance is the result of the treatment of the researcher. These two estimates of variance are compared on random differences present in the sample.

These two estimates of variances are compared using the *F*-test.

A simplified formula for the *F* statistic is:

$$F = \frac{Ms_b}{Ms_w}$$

where MS_b is the mean squares between the groups and MS_w is the mean squares within groups.

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Non-Parametric

When the distribution of variables in the distribution is skewed to one side or the assumptions of normality are not met and the sample means are not normally distributed, parametric tests can lead to errors. In such cases, non-parametric tests are used. Non-parametric tests are usually used to analyze ordinal or categorical data. As is done for parametric tests, the non-parametric tests also compare the test statistic with known values of the sampling distribution leading to acceptance or rejection of the null hypothesis.

The most commonly used non-parametric test is the Chi Square Test.

Chi Square Test

We use this test when we want to compare bivariate data. For e.g. we may want to understand whether men and women in similar job roles in an organization have the same salary or not. The Chi-square data compares the data of the job roles of men and women employees in an organization to the data of the salary that they receive. The null hypothesis would be that male and female employees in similar roles would have the same salary while the alternate hypothesis would be that they do not receive the same salary.

The Chi-square test compares the frequencies and tests whether the observed data differ significantly from that of the expected data if there were no differences between groups (i.e., the null hypothesis). It is calculated by the sum of the squared difference between observed (O) and the expected (E) data (or the deviation, d) divided by the expected data by the following formula:

$$x^2 = \sum \frac{\left(0 - E\right)^2}{0}$$

The Research Report

After we have interpreted and analyzed the data that we have collected through our report, we need to write the finished report. The last step in the research process is the presentation and preparation of the research report. If the report is not well written, all the effort in preparing, gathering and analyzing the data shall be of little value. Hence to write a good report, the following points need to be kept in mind:

1. Write in clear and lucid English which is grammatically correct. Have the distinguishing touch of your own style of writing. Avoid plagiarism at all costs.
2. Write in a language which your intended audience shall be able to understand. For example, if your audience does not understand technical jargons, try to avoid technical language as much as possible.
3. Be objective in stating the aim of your research and presenting your findings in a clear and concise manner
4. Present your arguments, data, and findings in a clever, logical and ordered way.
5. Although there is no particular format for presenting a research report and it differs according to the study and the researcher, we present here a general outline of the research report

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The Title of the Report

The title should explain the purpose or intent of the study and should be brief yet should sound interesting and catchy to the readers of the report. For our research, the title of the paper can be "The Glass Ceiling: Does it really exist in the Indian IT Sector?"

Table of Contents

The table of contents sequentially lists the different sections of the report along with their page references, for the ease and comfort of the readers.

The Objective

This section talks about the objective of the report. It defines the aim of the report and gives an idea about the focus of the study. It helps the readers to get a clear idea about the scope of the research.

Have an Outline

Outline helps to visualize how your essay will look. Outline can be a flowchart of ideas or a concept map. It helps the researcher as well as the audience to understand how the report shall present the ideas that have been generated through research.

Introduction

Introduction may include the literature review of the field of study and explain how the gaps left in previous literature, has led to the present study take place. It also explains why the present study is important or required. The researcher should get to the point and the target audience should be identified. The introduction should be clear and interesting so as to capture the attention of the researcher.

Background

Background helps to present the setting of the research being conducted. The problem statement behind the research should be highlighted in the background. The reason why the problem is important should also be explained in this section. Finally, the motivation behind the research question should be emphasized here. All this should be covered as a preface to the main research problem.

The Body of the Paper

In the body, we give literature for backing up the research statement. Each paragraph in the body should have the main statement and the ensuing paragraph should explain that statement. In this way, the body is linked to the thesis statement. In the body statement, we also specify the methodology that we shall be used for obtaining data for the research. The purpose of the methodology section should be to used to explain the research design, the data collection, and analysis design. It would explain to the readers

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whether the design is exploratory or conclusive. Basically, the body of the paper helps in understanding the nature of the research problem and explains the methods that shall be used to solve this problem.

Results and Findings

The bulk of the research report talks about the research findings which should be organized around the main research question and objective of the research. The data that has been found should not be written as a haphazard series of tables or figures, rather it should be categorized and presented in a manner in a logical manner which should be both interesting and insightful to the readers.

Limitations

It is obviously not possible that your research will not have any shortcomings. All research has certain limitations, which needs to be communicated to the readers clearly and concisely. Whatever gap is identified in the research should be written in this section. This does not mean that the research is being belittled but rather it enables the researcher to judge the validity of the results and be truthful to their audience.

CONCLUSION

This section summarizes the major findings of the research and provides the final thoughts of the researcher on the topic. It basically states the take away from the research conducted. The researcher may also make any recommendations to the research question that they have arrived at, after a complete analysis of the research findings.

Bibliography

The bibliography section helps to list the publications or sources that have been consulted for the purpose of the research. MLA, APA and Chicago are the most common styles to be used for referencing of an article. Moreover, the font size, the font type etc are other things to be kept in mind while writing the bibliography.

After finishing of writing of the report, we need to analyze the report for accuracy and precision. It is a good idea to read the report from an outsider's perspective. We need to ask ourselves whether the flow of the report is logical and whether it is lucid enough to be understood by someone, who is reading the paper for the first time.

All these steps provide a basic guideline on how to conduct research on diversity using quantitative methods. The quantitative tests and statistical techniques given above, attempt to assist researchers in conducting research on different facets of diversity. It is hoped that through these methods, students and researchers shall be encouraged to conduct a quantitative study on different diversity dimensions and contribute to the growing research in this field.

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Chapter 57
Employee Welfare Measures:
The Impact on Employees' Efficacy and Organizations Productivity

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ABSTRACT

The welfare measures for employees in an organization have always and will keep playing a pivotal role in enhancing the morale of the employees. These schemes facilitate thrust for both the employee and employer relations. An employee's welfare is inherent core component, as they act as life blood for achieving the objectives of an organization. The main intention behind implementing the welfare measures is to secure the employee force by providing proper human condition of work and minimizing its hazardous effect on the life of the employees and their family members. This chapter determines the various welfare measures implemented with its impact on the employees' work efficacy in different public and private sector manufacturing organizations. This chapter also articulates the importance of welfare, symptoms of frustration, standards set by the employees, implications of welfare measures and its effectiveness on employees' and the organizational productivity.

INTRODUCTION

Welfare is the ultimate goal for which every being in this world strives for and when humans seek welfare wishes from God why should an employer be spared when it comes to welfare of employees. The term welfare refers to an act of seeking physical, mental, moral and emotional well-being of an individual. According to Hopkins (1955), Welfare is fundamentally an attitude of mind on the part of management, influencing the method in which management activities are undertaken. Employers concerned with

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introducing or extending welfare programs now or in the future must be concerned, not only with the past and current experience, but with developing trends (Nanda& Panda, 2013). Labour is any physical or intellectual activity applied in industrial production and one who performs it is a worker (Patro & Raghunath, 2016). According to the traditional economic theory, labour is referred as a factor of production which consists of manual and mental exertion and receives some return in form of wages, salaries or professional fees (Railkar, 1990).

The concept of 'Labour welfare' is flexible, elastic and of course is interchangeably used with changes in time, region, industry, country, social values and customs, the degree of industrialization, the general social economic development of people and political ideologies prevailing at particular moments (Srinivasa, 2013). In general, the term labour, worker, workman or employees are all used to refer to the wage earning human agents in various industries and organizations.

Patro (2017) assert that staff welfare includes providing social club and sports facilities as appropriate, supervising staff and works' canteens, running sick clubs and savings schemes; dealing with superannuation, pension funds and leave grants, making loans on hardship cases; arranging legal aid and giving advice on personal problems; making long service grants; providing assistance to staff transferred to another area and providing fringe benefits (Ramesh, 2012). However, the Committee on Labour Welfare (GOI, 1969) referred as such facilities and amenities as adequate canteens, rest and recreation facilities, sanitary and medical facilities arrangements for travel to and from and for accommodation of workers employed at a distance from their homes, and such other services, amenities and facilities including social security measures as contribute to conditions under which workers are employed.

Employee welfare has two aspects i.e. negative aspect and positive aspect. On the negative side, employee welfare is concerned with counteracting the baneful effects of the large scale industrial system of production especially capitalistic, and so far as India is concerned on the personal or family, and social life of the employee (Satyanarayana, 2015). On its positive side, welfare deals with the provision of opportunities for the worker and their family for a good life as understood in its most comprehensive sense (Moorthy, 1968). Thus, improving the quality of working life by providing the employee welfare facilities would go a long way in achieving the goals of the organization.

Employee Welfare in Public and Private Sector

Employee welfare implies the setting up of minimum desirable standards and the provision of facilities like health, food, clothing, housing, medical assistance, education, insurance, job security, recreation etc., (Nanda and Panda, 2013). Such facilities enable a worker and his family to lead a good work life, family life and social life (Sarma, 1996). A proper organization and administration of welfare facilities can play a vital role in promoting better working conditions and living standards for industrial workers, and also increase their productivity (Kohli and Sharma, 1997). Welfare measures should be provided by the organizations, whether public or private sector as it raises the morale of employees, reduce risk and insecurity, eliminate turnover and absenteeism, and increase the production and productivity ((Patro, 2017). In general, the public sector consists of governments and its controlled or funded enterprises. This includes federal, provincial, state, or municipal governments, depending on where the people live. Privacy legislation usually calls organizations in the public sector a public body or a public authority. The private sector is usually composed of organizations that are privately owned and not a part of the government. These usually include corporations, enterprises, companies or business, regardless of size, ownership and structure. It may cover all sectors of the food, agriculture, forestry and fisheries systems

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from production to consumption, including associated services like financing, investment, insurance, marketing and trade (Priti, 2009).

In the present competitive environment the private sector organisations are playing major role in the overall development of the economy. So, it is essential to focus on the welfare measures which enhance the employees quality of work life and also helpful in increasing the organizations productivity (Patro, 2015). Generally in public sector, the funds are organized and provided either by central or state government. So, they are able to provide the welfare measures effectively to their employees without any hesitation. In private sector, large scale organisations can pool more funds and provide the welfare facilities as effectively as public sector organizations provide to their employees (Robinson, Sparrow, Clegg & Birdi, 2006). But, small scale organizations may have limited funds, so they may not be able to take care of the welfare facilities effectively, when compared with public sector.

Employee Welfare Status in India

The transference of rural population to the urban areas, as a result of industrialization, brought with it certain sociological problems. Having been up rooted from their rural mornings the new class of industrial workers required welfare services to be provided to them in their new surroundings so as to enable them to adapt themselves to changing situations (Reddy, 2004). The crux of the problem of employee welfare, whether under legislative compulsion or otherwise, is to determine the respective roles to be played by the State, the employers, trade unions and voluntary agencies (Agalgatti, 2008). Apart from social responsibility, the State as an employer has the basic social responsibility of acting as a model employer and to provide all types of welfare amenities to its workers.

However, employee welfare activities started gaining ground after the Second World War, when the British Government revised and introduced many labour laws that aimed at improving employment conditions, including welfare of the working class (Satyanarayana, 2015). It was only after independence that the problem of employee welfare was given due attention when the socialistic pattern of society was adopted for achieving various socio-economic goals of the country. In addition to the above scenario, Wage committee has pointed out that "unless the precise responsibilities of employers in regard to welfare work are defined by law, such employers are not likely to fall in line with their move enlightened and far sighted conferrers" (Rao, 2008).

The Government of India in view of enhancing welfare and wellbeing of workers has laid down provisions for employee welfare under different labour laws. One of the important laws in this regard, is the Factories Act, 1948 which was also amended in 1987, elaborates various provisions in relation to health, safety, and welfare of employees, provisions regarding working hours including weekly hours, daily hours, weekly holidays, regarding employment of young persons, canteen facilities, first aid, shelters, rest rooms and lunchrooms annual leaves with wages and provision regarding employment of women and young persons in every organization (Ghosh and Nandan, 2015; Patro, 2017). Finally, the Act makes provision for the employment of Welfare Officer in manufacturing organizations and service sector also. Thus, it is clear that the Act makes very elaborate and unambiguous provisions regarding the minimum welfare standards to be followed by the management (Ramesh, 2012). But laying down the standards alone is not enough. It must also to be ensured that these provisions are implemented successfully. The non-implementation leads to dissatisfaction of the employees working in the organizations.

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BACKGROUND

The literature related to the provision of welfare measures that influence the employee's satisfaction and efficacy are discussed in this chapter. According to Reshma and Basavaraj (2013) the prime aim of a nation is to achieve maximum possible economic development so as to achieve higher standard of living for workers in the country. Aswathappa (2010) discussed the various types of benefits and services provided to employees in terms of payment for time not worked, insurance benefits, compensation benefits, pension plans etc. He also discussed the ways to administer the benefits and services in a better way. Ahuja (1988) emphasized the need for labour welfare and social security in India. He felt that provision of welfare and social security measures makes the employees satisfied with their jobs leading to their improved performance. The various problems faced by the enforcement machinery in the implementation of these welfare and social security measures. The social security measures in terms of medical care, sickness benefit, unemployment benefit, maternity benefit etc., besides explaining the social security system in India (Tripathi, 1998). Provision of intra-mural and extra-mural welfare facilities help in improving the quality of work life of employees' thereby good human relations will develop among different cadres of employees (Michael, 2001).

The need for labour welfare arises from the very nature of the industrial system. Employers need to provide welfare facilities to employees as the latter are exposed to various risks and at the same time they have to work in an entirely strange atmosphere (Kudchelkar, 1979). Monappa (1995) emphasized that labour welfare is an important facet of industrial relations, the extra dimension, giving satisfaction to the worker in a way that even a good wage cannot. With the growth of industrialization and mechanization, it has acquired added importance. The worker cannot cope with the pace of modern life with minimum sustenance amenities. He needs added stimulus to keep body and soul together. Employers have also realized the importance of their role in providing these extra amenities. The state only intervenes to "widen the area of applicability". A study by Kumar and Yadav (2002) revealed the overall satisfaction level of workers from welfare schemes was low in both the private and State sugar factories. Further, the workers in both sectors ranked the four employee welfare schemes according to their importance in the following order housing scheme, medical scheme, followed by education and recreation schemes. Robinson, Sparrow, Clegg, and Birdi (2006) identified the key behaviours, which were found to be associated with employee engagement. The behaviours included belief in the organization, desire to work to make things better, understanding of the business context and the 'bigger picture', being respectful of and helpful to colleagues, willingness to 'go the extra mile' and keeping up to date with developments in the field. Joseph, Joseph, and Varghese (2009) points out that the structure of a welfare state rests on its social security fabric. Government, employers and trade unions have done a lot to promote the betterment of worker's conditions.

Manzini and Gwandure (2011) argued that, welfare services can be used to secure the labour force by providing proper human conditions of work and living through minimizing the hazardous effect on the life of the workers and their family members. A research in different organizations by Patro (2012), acknowledged that the employees are assets of any organization. The needs of the employee must be satisfied in order to meet the goals of the organization. Any organization would be effective only when there is high degree of co-operation between the employees and their management. Parul and Ashok (2013) proved that different welfare provisions provided to the employees working in an organization under Factories Act, 1948 are having positive relation with the employee satisfaction. The reasons behind this are the factors that lead to satisfaction and if these facilities are not present, it sometimes leads

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to dissatisfaction. Nanda and Panda (2013) stated that adopting better kind of welfare activities create an effective working environment and thus better productivity. The different kinds of welfare schemes like medical allowance, death relief fund, insurance, housing, transport, recreation club facilities, etc., are provided by the company to the employees to maintain better industrial relations (Mohan & Panwar, 2013). Mwiti (2007) pointed that welfare services may not directly relate to an employee's job but the presence or absence of the services is notable through employee performance, attitude, high or low labour turnover.

According to Priti (2009) the role of welfare activities is to promote economic development by increasing efficiency and productivity with the underlying principle being making workers give their loyal services ungrudgingly in genuine spirit of co-operation and the general well-being of the employee. Burchardt (1997) examines the balance between public and private sector welfare activity in five areas: Education; Health; Housing; Personal Social Services; and Income Maintenance and Social Security. Satyanarayna and Reddi (2012) stated that the overall satisfaction levels of employees about welfare measures in the organization cover are satisfactory. However, a few are not satisfied with welfare measures provided by the organization. Logasakthi and Rajagopal (2013) revealed that the employees enjoy not only the satisfaction of their jobs but also various facilities given by the firms. The labour extends their maximum support for the improvement of the company. The management provides health, safety and welfare measures to employees that help for better performance in the work and working environment. Patro and Raghunath (2016) found that the needs of the employee must be satisfied in order to meet the goals of the organisation. Any organisation would be effective only when there is high degree of co-operation between the employees and their management. Meena and Dangayach (2012) discovered that satisfied employees made positive contributions to the organizational effectiveness and performance. Staff well-being and engagement has direct impact on organizational performance and ultimately organizational success. It is an obvious statement, but high employee satisfaction levels can reduce employee turnover (Sinha, 2013).

Sabarirajan, Meharajan, and Arun (2010) argue that welfare measures play an important role in employee satisfaction resulting in improved quality work life. Employee welfare facilities enable workers to live a richer and more satisfactory life. After employees have been hired, trained, and remunerated, they must be retained and maintained to serve the organization better (Laddha, 2012). Srinivasa (2013) emphasized that labour welfare covers an ample field and connotes a state of well-being, happiness, satisfaction, protection and enlargement of human resources and also helps to motivate the worker. Lalitha and Priyanka (2014) ideated that the welfare measures need not be in monetary terms only but in any kind/forms. Employee welfare includes monitoring of working conditions, creation of industrial harmony through infrastructure for health, industrial relations and insurance against disease, accident and unemployment for the workers and their families. Mishra and Manju (2007) in a study found that the police service provides essential service to the public in Kenya and thus their labour welfare activities need to address the same. Welfare services may be provided for matters concerning employees in terms of supplementing the income of the workers by providing services such as housing, medical assistance, canteens and recreation facilities. Patro (2015) in a comparative analysis of welfare measures in public and private sector found that an employee's welfare is the key dimension to smooth employer-employee relationship. These welfare facilities improve the employees' morale and loyalty towards the management thereby increasing their happiness, satisfaction and performance.

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IMPORTANCE OF EMPLOYEE WELFARE

Healthy organizational relations are necessary to have well defined policies and procedures as because reactive policies cannot continue for long period. Growing competition among companies, complex economic environment, rising labour costs, etc., compel organizations to adopt proactive strategies towards organizational relations, while having proactive strategies; the organizations have to ensure achievement of corporate objectives through cooperation and commitment of employees (Sundaray, Sahoo and Tripathy, 2010). Organizational relations assume that the most delicate and complex issue in the present day company set up is the principle of democracy and its influence in the management of labour. The conflicts between employers and employees are inherent in any economic activity. Conflict is permissible, if it aims at minimum interruption in economy. In India, welfare has much significance and the equitable settlement is its ultimate objective. Considering the importance of manufacturing organizations, sincere attempt has been made to find out the link between employee welfare measures and organizational productivity (Patro, 2017).

Employee welfare activities have become a key factor for the overall development of the organizations. The organizations provide welfare measures to their employees to increase their efficiency and reduce absenteeism. Employee welfare schemes improve the employee-employer relations also. It helps to improve the recruitment process as the job becomes more attractive and more effective. Voluntary efforts for the welfare of the employees by the management may reduce the thought of government and others parties intervention in future. The employee welfare schemes can be classified into two categories viz., statutory and non-statutory welfare measures.

The statutory schemes are those schemes that are compulsory to provide by an organization as compliance to the laws governing employee health and safety. These include provisions provided in industrial acts like Factories Act 1948, Dock Workers Act (safety, health and welfare) 1986, and Mines Act 1962. The statutory welfare measures include the provisions such as drinking water, facilities for sitting, first aid appliances, latrines and urinals, canteen facilities, spittoons, lighting, washing places, changing rooms, rest rooms, etc. The non-statutory welfare measures differ from organization to organization and from industry to industry. The non-statutory welfare schemes may includes personal health care, flexi-time, employee assistance programs, grievances policy, maternity & adoption leaves, medi-claim insurance scheme, employee referral schemes, etc. The chapter analyzes the implementation of statutory and non-statutory welfare schemes, and its impact on organizational productivity and employee efficacy. The chapter discusses the peculiarities of the labour management situations and suggests ways and means for the improvement of the organizations.

RESEARCH HYPOTHESES

The statistical analysis was carried out on the data collected in order to test the hypotheses framed. A descriptive statistical method was used to analyze the data. To measure the satisfaction level of the employees on the implementation of the welfare measures in different public and private sector organizations, a 5-point scaling technique is proposed which ranges from Excellent (5), Good (4), Satisfied (3), Poor (2) and Not Inforce (1). In the study six important welfare dimensions such as Housing facilities, Education benefits, Medical benefits, Recreational facilities, Retirement benefits, and other facilities are identified for collecting the opinion of the employees and an in-depth analysis was done. A statistical

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technique, Pearson Chi-Square test is used to test the hypothesis and certain parameters to demonstrate the influence of welfare facilities on employee efficacy, for which the following hypothesis is constructed:

H_{01}: Housing Facilities have a significant impact on employee's efficacy and organizational productivity.
H_{02}: Educational Schemes have a significant impact on employee's efficacy and organizational productivity.
H_{03}: Medical or Health Benefits have a significant impact on employee's efficacy and organizational productivity.
H_{04}: Retirement Benefits have a significant impact on employee's efficacy and organizational productivity.
H_{05}: Working Environment have a significant impact on employee's efficacy and organizational productivity.
H_{06}: Other welfare measures have a significant impact on employee's efficacy and organizational productivity.

METHODOLOGY

The present research is an enquiry into the various employee welfare measures implemented by different public and private sector organisations in Visakhapatnam city, and the satisfaction experienced by the employees working in these organisations. The chapter aims to draw a comparison on level of satisfaction experienced by employees and its influence on their efficacy and organizational productivity. The data presented in the study are collected from both primary and secondary sources. The primary data was collected from the respondents i.e. employees by distributing questionnaires, through personal interviews, and direct personal observation. The information was collected from the employees who are working in different public and private sector manufacturing organisations individually and taken their views and suggestions. The purpose of the study was explained to them and they were asked to fill up the scales. They were assured of confidentiality of their responses.

The questionnaire was distributed to 400 employees' personally to know their views regarding the satisfaction level on the implementation of various welfare measures from different organizations. These questionnaires were selected on random basis. The number of valid filled in questionnaires selected for the study from various organizations is 200; out of which 100 respondents are from public sector and 100 respondents from private sector organisations. The collected data is used to compare the opinion regarding the impact of the employees on the provision of welfare measures. The secondary data was collected from various published sources such as, books, news paper publications, journals, company magazines, official websites of various industrial and service sector organisations, and some other sites are also searched to collect the relevant data. The information collected from various sources are carefully computed, classified, tabulated, analyzed and interpreted. The statistical technique used for analyzing the data collected from the tabulated data are analyzed with tables, so as to draw inferences based on findings, suggestions and conclusions on employee welfare schemes. The main objective is to know the various employee welfare measures and to spotlight on the areas that the management of both the public and private sector organizations needs to pay attention.

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STATISTICAL ANALYSIS AND DISCUSSIONS

The employees of various public and private sector organizations are contacted for their opinion regarding the satisfaction level on the various welfare measures implemented in their organizations along with its influence on their efficiency. The questionnaire consists of six questions (each consists of different options related to the question) along with comments and suggestions. The opinions collected from the employees, based on the questionnaire are used for comparative analysis and test the hypothesis. A Pearson Chi-Square statistic test was conducted to test the hypothesis regard the various welfare schemes implemented in both the public and private sector organizations. The results and findings regarding the impact of each welfare measure on the employees' efficacy are discussed.

Housing Facilities or Allowances

Housing or Quarters facility has direct bearing on the health and efficiency of the employees. The provision of quarter facilities at low cost with basic amenities such as, adequate space, ventilation, electricity facilities, water facility, transport facility, maintenance facilities (roads, lighting, drainage systems, lavatories), and other sanitary arrangements. The organizations may also provide housing allowance to the employees. Under housing facilities four options were provided in the questionnaire namely; (a) Provision of Staff Quarters, (b) Housing Allowances, (c) Transport Allowance, and (d) Transport Facility. The opinions of the employees regarding these housing facilities are shown in Table 1 and 2.

Table 1. Opinion of employees' on welfare measures (In percentages)

Sl. No.	Dimension	Sector	Excellent	Good	Satisfied	Poor	Not Inforce	Total
1	Housing Facilities/ Allowances	Public	17	40	32	9	2	100
		Private	3	6	15	47	29	100
		Total	20	46	47	56	31	200
2	Educational Schemes/ Benefits	Public	8	17	25	30	20	100
		Private	7	19	26	32	16	100
		Total	15	36	51	62	36	200
3	Medical and Health Benefits/ Schemes	Public	19	43	33	5	0	100
		Private	1	10	19	45	25	100
		Total	20	53	52	50	25	200
4	Retirement Benefits	Public	20	52	25	3	0	100
		Private	1	4	8	41	46	100
		Total	21	56	33	44	46	200
5	Work Environment	Public	5	25	43	21	6	100
		Private	8	30	55	5	2	100
		Total	13	55	98	26	8	200
6	Other Welfare Facilities/ Services	Public	15	37	41	5	2	100
		Private	8	21	39	21	11	100
		Total	23	58	80	26	13	200

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Table 2. Results of chi square analysis (n=200)

Sl. No.	Dimension	χ^2	Liklihood Ratio	Linear-by-Linear Association	Sig.
1	Housing Facilities/ Allowances	90.381	101.655	78.428	0.000
2	Educational Schemes/ Benefits	0.706	0.707	0.128	0.951
3	Medical and Health Benefits/Schemes	97.516	117.203	88.963	0.000
4	Retirement Benefits	145.909	181.94	128.673	0.000
5	Work Environment	14.462	15.307	7.744	0.006
6	Other Welfare Facilities/Services	22.671	24.133	19.002	0.000

It is observed that in public sector almost 89 per cent and in private sector only 24 per cent responded positively. The housing facilities provided by the private sector organizations are very poor when compared with the public sector organizations. The Pearson Chi-Square statistic test shows that, $\chi^2 = 90.381$, and $p = 0.000 < 0.001$; i.e., a very small probability of the observed data under the hypothesis is of no association. Hence, the hypothesis (H_{01}) is supported. It is observed that the housing facilities provided by the organizations have significant impact on the employees' efficacy. It is clear that public sector employees are satisfied with housing facilities to a large extent, whereas under private sector almost more than half of the employees are not provided with adequate housing facilities. So, the private sector organizations need to take major steps to provide housing facilities to their employees.

Educational Schemes or Benefits

Education plays a very important role in motivating and enabling the progress of employees for their mental and physical development. The educational needs in any sector are two-fold i.e., adult/ employees education schemes and schools/colleges for their children. To know the influence level on the employees regarding the implementation of Educational schemes, five options are included, such as: (a) Sponsoring for employees' higher education, (b) Reimbursement of children tuition fees, (c) Permission for part time education, (d) Schools or Colleges in the organization premises, and (e) Training and Development programs. The opinion of the employees on these educational schemes provided in both the public and private sector organization are shown in Tables 1 and 2.

It is found that 50 per cent from public sector and 42 per cent from private sector have responded positively regarding educational schemes in their organizations. Almost half of the employees are satisfied and influenced by the educational schemes provided by their organizations. Based on the Pearson Chi- Square statistic test, it is observed that $\chi^2 = 0.706$, and $p = 0.951 > 0.001$; i.e., the probability of the observed data is more than the hypothesis. Therefore, the hypothesis (H_{02}) is not supported. It is observed that there is no significant impact of the educational schemes provided by both the public and private sector organizations on the employees. So, it is clear that educational schemes or allowances provided by both public and private sector organizations need to be improved and provide better facilities to motivate the employees.

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Medical and Health Benefits/Schemes

The employees' health should be given utmost importance, as it also results in development of an organization. Health care for employees helps to reduce the incidence of sickness, absenteeism and increases their efficiency and productivity. The private or public organizations have to provide medical facilities for the employees and their family members also. Medical benefits include five options i.e., (a) Medical reimbursement, (b) maternity benefits, (c) Emergency services, (d) Frequent medical checkups, (e) First-aid kits and treatment at company hospital. The influence of medical or health benefits on the employees of both the public and private sector organizations is shown in Table 1 and 2.

The responses of the employees take on medical facilities shows that, almost 95 per cent of public sector responded positively in contrast to only 30 per cent in private sector. It is also observed, that the medical benefits provided by the private sector are very remote when compared with the public sector organizations. The Pearson Chi-Square statistic test, $\chi^2 = 97.516$, and $p = 0.000 < 0.001$; i.e., a very small probability of the observed data under the hypothesis is of no association. Therefore, the hypothesis (H_{03}) is supported. It is found that there is much impact of the medical benefits provided by both the public and private sector organization on their employees. Therefore, the private sector has to initiate necessary steps to provide proper medical and health benefits to their employees to increase their efficiency.

Retirement Benefits

Retirement benefit is one the important welfare scheme, which is to be provided to the employees in any organizations. These benefits increase the satisfaction level of the employees towards the organizations and motivate them to achieve the organizational objectives. In the study Retirement benefits also includes five options namely: (a) Pension, (b) Retirement or Death compensation, (c) Leave encashment, (d) Medical facility after retirement, and (e) Insurance benefits. The influence of retirement benefits and schemes on the employees of both public and private sector organizations are shown in Table 1 and 2.

The response of employees concerning the retirement benefits reveals that 97 per cent in public sector and only 13 per cent in private sector responded positively. It is found that the retirement benefits provided by the private sector rare when compared to public sector organizations. The Pearson Chi-Square statistic test shows that $\chi^2 = 145.909$, and $p = 0.000 < 0.001$; i.e., a small probability of the observed data under the hypothesis has no influence. Therefore, the hypothesis (H_{04}) is supported. It can be concluded that there is progressive influence of the retirement benefits provided by both the public and private sector organization on their employee's efficiency. Therefore, the private sector organizations need to put much effort to provide retirement benefits to their employees to increase their satisfaction level.

Working Environment

A positive work environment makes employees feel good about coming to work, and this provides the motivation to sustain them in the organization. The management should provide information and resources to assist their employees to make healthy lifestyle choices and to achieve and maintain good health. It promotes work-life balance by creating a healthy physical, social and psychological work environment as a core business goal. A healthy work environment makes the employees' more satisfied and improves their work efficiency. The present study includes the six options such as, (a) Transparent & Open communication, (b) Cooperation by management, (c) Autonomy at work, (d) Recognition and Appreciation

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for hard work, (e) Grievance settling, and (f) workload and Job stress. The impact of working environment on the employees of both public and private sector organizations are shown in Table 1 and 2.

The influence of work environment on the employees shows that in public sector 73 per cent and in private sector almost 93 per cent responded positively. Almost both public and private sector employees are satisfied with the working environment in their organizations. The Pearson Chi-Square statistic test states that, $\chi^2 = 14.462$, and $p = 0.006 < 0.006$; which shows that probability of the observed data under the hypothesis has an association. Therefore, the hypothesis (H_{05}) is supported. It can be said that there is a significant impact of the work environment provided by both the public and private sector organization on their employees. The organizations are providing good working environment and the public sector organizations need to improve these conditions as it helps in maintaining healthy relations with the management.

Other Welfare Facilities or Services

Finally, the questionnaire regarding the implementation of other facilities include eight options like; (a) Canteen or store facilities, (b) Drinking water, (c) Sanitary facilities, (d) Recreation facilities, (e) Post office or bank facilities, (f) Co-operative societies, (g) Telephone communication facilities, and (h) Restroom and Locker facilities. These facilities should be given much importance in all types of organizations, as it increases the employees' quality of work life and thereby increasing their efficiency level. In the study, these other facilities are also covered to know the opinion regarding its influence on the employees in various public and private sector organizations as shown in Table 1 and 2.

The response of employees on the execution of other facilities reveals that 93 per cent in public sector and 68 per cent in private sector responded positively. The comparison shows that the private sector employees less satisfied than the public sector employees, regarding these facilities. The Pearson Chi-Square statistic test states that, $\chi^2 = 22.671$, and $p = 0.000 < 0.001$; i.e., a small probability of the observed data under the hypothesis has significant impact. Therefore, the hypothesis (H_{06}) is supported, since $p < 0.05$ (i.e. $p < 0.001$). It can be concluded that there is much influence of the other facilities provided by public and private sector organization on their employees' efficacy. Therefore, the private sector organizations need to put a little effort to improve these other facilities for their employees in their organizations.

Table 3. Summary of the hypotheses results

Sl. No.	Hypotheses	Result
1	**H_{01}:** Housing Facilities have a significant impact on employee's efficacy and organizational productivity.	Supported
2	**H_{02}:** Educational Schemes have a significant impact on employee's efficacy and organizational productivity.	Not Supported
3	**H_{03}:** Medical or Health Benefits have a significant impact on employee's efficacy and organizational productivity.	Supported
4	**H_{04}:** Retirement Benefits have a significant impact on employee's efficacy and organizational productivity.	Supported
5	**H_{05}:** Working Environment have a significant impact on employee's efficacy and organizational productivity.	Supported
6	**H_{06}:** Other welfare measures have a significant impact on employee's efficacy and organizational productivity.	Supported

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The welfare measures such as housing schemes, retirement benefits, medical benefits, work environment and other welfare schemes have shown significant impact on the employees work efficiency, whereas educational schemes have shown no association with the employees based on the Pearson's correlation analysis in different public and private sector organizations. Therefore, the welfare schemes are considered as critical factor in influencing the efficacy of the employees'. The employees' working in public sector organizations are highly satisfied with the welfare measures provided to them when compared to those working in private sector organizations. The public sector offers superior employee welfare facilities to their employees than those provided in private sector. Proper implementation of both intramural and extramural welfare measures increases the employees' work efficiency and therefore helpful in overall productivity of the organization.

SYMPTOMS OF FRUSTRATION DUE TO INADEQUATE MOTIVATION

The most common symptoms of frustration as a result of inadequate motivation in the form of employee welfare measures in an organization are (Teryima, Timothy, Faajir, John, & Vivien, 2016):

- **Anger Displacement:** Displacement can be defined as moving something from its place to another place. When employee welfare measures are denied for a long period of time, anger displacement seems to be common phenomena in contemporary employees, which means they end up taking out their anger on another person or may be his or her subordinate at workplace the primary source of frustration being lack of motivation derived when welfare measures are put in place.
- **Aggression:** Aggression, in general, is any behaviour an individual carries out with the intent to harm another person or group of people. Aggression can occur in a variety of situations mainly resulting from dissatisfaction. One important field to understand aggression is in the workplace. Workplace aggression is considered as specific type acts like, physical assault, threatening or coercive behaviour that causes physical or emotional harm in a work setting
- **Regression:** Regression results in a sudden changeover of employee behaviour from constructive to childish behaviour. Over a point of time employees start behaving like children. Other characteristics of regressive behaviour are; having petty fights and arguments, following the leaders for everything, lack of responsibility, unreasoned fear, ganging up.
- **Work Fixation:** Work fixation is another phenomena where employees stop being productive and try and work with a fixed frame of mind (i.e. employees not working to their full potential). An act to continue and give limited unproductive results.
- **Rationalization:** Offering socially acceptable excuse or reason for one's failure to achieve in place of the real reason has yet another reason put forth for their lack of satisfaction.
- **Negativism:** Employee negativism can be defined as an employee tendency to resist external commands, suggestions, or expectation by doing nothing or something contrary or unrelated to the stimulus. It also goes by interpreting every action in the wrong way to undo it.
- **Participation Withdrawal:** if employee fixation was one of the consequences of dissatisfaction, employee withdrawal is yet another way to show dissatisfaction by removing oneself from participation *and* to become socially or emotionally detached in workplace.
- **Work Alienation:** This is also a common problem as a result of dissatisfaction in organization. It is a feeling of self-helplessness. It happens when employees feel that organisation is doing nothing

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great towards employee welfare. According to Faunce (1968) powerlessness, normlessness and meaninglessness are predisposing conditions to alienation. Alienation steps in when an employee perceives that he cannot achieve his goal or objective through the organization.

STANDARDS SET BY EMPLOYEES IN RETORT TO WELFARE BENEFITS

There are certain standards set by the employees in retort to the various welfare measures provided by the organizations. Yalokwu (2006) identified performance categories and standards of performances that a motivated employee need to adopt in courtesy to employees' welfare measures in an organization are:

- **Work Quality Standard:** Standard can be defined as a benchmark in the area of your specialisation. When employee satisfaction is in place they provide accurate, thorough, professional work regularly automatically or may be with reference to the standards set by the organisation.
- **Job Knowledge Standard:** Though job knowledge is the basic idea every employee will have with a lot of employees having a high level of satisfaction employees always stay well informed and educated in performing to the level expected for the job.
- **Organization and Planning Standard:** A organisation can become successful only with a proper vision in place and this becomes much more easy with a happy at heart employee batch who tend to organize, plan, and forecasts work skilfully to meet their given job description.
- **Analysis and Judgment Standard:** Analysing problems skilfully, using logic and good judgment to reach solutions will always be inherent quality of a efficient employee and of course, all organisations will agree with the fact that efficient employees is by product of fair treatment of employees.
- **Interpersonal Akills Standard:** Employee when frustrated may end up having a very bad time but with employees of high morale aftermath of satisfaction work well with others, get things done with people and keep information open at all levels required to take the organisation to its set vision.
- **Initiative Standard and Team Work Standard:** Well a good employee can be distinguished easily two important things a) Imitativeness b) Teamwork both which Helps to determine the needs of the work place; help all to meet the goals. Coordinates own work with others, seek opinions, values working relationships.
- **Quality Service Work Standard:** The end point for every organisation is not just reach their set goals but also to provide a exquisite service standard and regularly seek to provide quality service to achieve customer satisfaction.
- **Attendance and Punctuality Standard:** Well a happy employee can of course be picked up based on his attendance and punctuality standard and this majorly depends on the employer, on how well the employees are give fair treatment in the organisation. Being regularly present and punctual gives organisation a sense of trustworthiness.

Organizational commitment on the other hand is defined as a state in which an employee identified with a particular organization and its goals and wishes to maintain membership in the organization (Langton, Robbins and Judge, 2010). The measures of commitment include:

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- **Affective Cmmitment:** In this case there is an individual relationship to the organization: his or her emotional attachment to, identification with and involvement in the organization.
- **Normative Commitment:** This is the obligation an individual feels to staying with the organization.
- **Continuances Commitment:** This is an individual's calculation that it is in his or her best interest to stay with the organization based on the perceived costs of leaving the organization.

A positive relationship appears to exist between organizational commitment and job productivity, but it is a modest one. Several researches have reveals that, the relationship between commitment and performance is strongest for new employees, and it is considerably weaker for more experienced employees.

IMPLICATIONS OF WELFARE MEASURES

*"*Beneath every ocean underlies valuable things beneficial to a human being.*"* In the same way the philosophy of employee welfare services is based on the theory, that success of an organization depends upon harmonious relationship and co-operation between the employee and employer, which in-turn has scope for many future prospects beneficial to both the parties (Patro, 2016).

1. **Allegiance:** Apparently an organisation can seldom ask for allegiance from employees unless they show concern to the people working in the organisation, when welfare facilities are provided to employees apart from other essentials, it seeds a sense of togetherness in the minds of employees. An organisation which is strong with a sense of loyalty and togetherness with its employees, that itself is a big step forward towards ultimate goal.
2. **Job Commitment:** Commitment is a phenomena which is very difficult to have in everyday life, and in an organisation it is one of the key factors of success and when organisations are committed to employees by providing them what they need it reciprocates with a opposite job commitment from employee side. Job commitment can be simply defined as psychological frame of mind where employees are being connected to their Goals, Organisation, and Job.
3. **Company Goodwill:** Ensuring good care of employees have many benefits or can be called as by products to an organisation, some tangible and others intangible. Good will is one intangible benefit an organisation gets for being faithful to employee and fulfilling their needs over a long period of time.
4. **Employee-Employer Relation:** When an employee starts his journey with a organisation or employer, it's not an obligation but a start of relationship as an employer and employee often move together and take the organisation to its goals. Effective employee welfare measures adopted by organisation, makes this relationship stronger and efficient.
5. **Employee Self-Actualization:** Self-actualization is synonymous to words and concepts such as self-discover, self-realisation and self-exploration. In this context it becomes much more important for given situation as once employee feel that the organisation is being like a family to him/her time and again, employees not just become committed and faithful but also explore themselves within the organisation which is good for organisational health.
6. **Reduced Employee Turnover:** Well of many evils haunting modern organisation the most threatening one is employee turnover i.e. number of employees leaving organisation for number of reasons.

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Given the fact the causes are many if organisation treats you like a family and cares for you, the same will be reciprocated to us from employees in longer run.

7. **Development of Nation:** The ultimate outcome of anything should be to be happy and achieve progress in one's life. Having a happy and satisfied workforce is not just step forward towards organisational goal but also towards one of important resorts of any organisation that is development of nation and a happy nation.

EFFECTIVENESS OF WELFARE MEASURES

Employees are the assets of every organisation. The needs of the employee must be satisfied in order to meet the goals of the organization. Any organization would be effective only when there is high degree of co-operation between the employees and their management. The welfare facilities go a long way stimulating interest in the employees to produce their full capacity and pay a good return to management in the long run. The Committee of experts on welfare facilities for employees constituted by the International Labour Organization (ILO, 1963) has initiated to provide the intramural and extramural welfare services to the employees by the employer in every organization whether public or private sector. The various facets of this study are not from no man's land and thus everyone acknowledges this area. The purpose is to provide them better quality of work life and to keep them happy (Patro, 2015; Bhardwaj 2012).

- Welfare facilities provide scope for better physical and mental health to the employee.
- Employee welfare brings organizational peace and cordial relations between employee and management.
- The social evil in the employee force such as gambling, drinking, etc., are reduced.
- Employer gets stable employee force due to provision of welfare facilities.
- Employer secures the benefits of low employee absenteeism and minimum employee turnover.
- Facilities like housing, medical benefits and education facilities help to increase productivity of employees.
- Welfare facilities provide great satisfaction to the employees and also help in maintaining industrial peace.
- Welfare facilities provide an attraction to the employees to stay longer in the organization enhancing loyalty.
- Welfare facilities make the employees happy and contented both at home and the organization to improve their general efficiency.

Thus, employee welfare is very comprehensive and embraces activities provided by employers, State, trade unions and other agencies to help workers and their families to lead a happy work life.

FURTHER RESEARCH DIRECTIONS AND LIMITATIONS

An employee's welfare is the key dimension for smooth employer-employee relationship. The organizations should take necessary steps to solve the problems in those measures so the employee can perform more effectively. New schemes and facilities should be added to existing ones to improve the efficiency

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of the employees by the management of all organizations. This chapter is expected to help other researchers to consider various welfare schemes that influence the employee's performance and organizational productivity. Further research with regards to other public and private sector and also industrial and service organizations can be considered as provision of welfare schemes has become important in every type of organization.

The organizations should make pragmatic efforts to enhance the employees' work life and their general welfare in order to elicit job satisfaction and motivation for increased efficiency and performance. Limitations are part and parcel of any study, and the present study is no exception which includes constraint of geographical coverage, since the study was conducted only in Visakhapatnam district and the result articulates the viewpoint of different employees working at these organizations.

CONCLUSION

The concept of employee welfare has have reached many milestones in improving the efficiency of employees since work related problems compliment poor quality of life for employees and a decline in performance. The Welfare measures are perquisite for every employee, without welfare measures employee is isolated in the organization. The objectives of the study have been achieved after conducting relevant statistical test and results obtained. The organizations are encouraged to be a driving force regarding these welfare facilities in motivating the employees and increase their work efficacies. India introduced literal industrial policy aimed at increasing industrial growth, promoting modernization, and enhancing technological advancement to make industrial competitive in both domestic and global markets. In this perspective, companies can improve their productivity which is possible with the satisfaction of labour. Even today's scientific development of modern techno-production methods higher productivity depends on workers.

The multiple dimensions of employee welfare facilities such as education facilities, medical facilities, retirement benefits and others facilities are indicative of the employees' efficiency in both public and private sector organizations. The management of all types of organizations should concentrate on welfare facilities outside the work place also, so as to increase the quality of work life of the employees. A welfare officer can be appointed to solve all the problems of the employees and maintain good relation between the employees and employer. Private units have to take necessary efforts to find out the employee pre-requisites and initiate those welfare facilities for the success of business units. New schemes and facilities should complement the existing ones in improving the competence and work life quality of the employees by the management of all organizations.

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KEY TERMS AND DEFINITIONS

Absenteeism: An employees' habitual and regularly practice of staying away from work without appropriate reason.

Employee: A person who enters into a contract of employment with another in returns for wages, salaries or other valuable considerations.

Employer: A person or institution that hires employees and offers wages or salaries in exchange of his work or labour.

Frustration: The feeling of being upset or annoyed as a result of being unable to change or achieve something.

Industrial Relations*:*: It refers to the relationship between employees and employer which stem directly or indirectly from union-employer relationship.

Motivation*:*: It is referred as one's direction to behaviour or what causes an individual to want to repeat behaviour and vice versa.

Productivity: It refers to the efficiency of industrious exertion, as measured in terms of the rate of output per unit of given input.

Turnover: It is the rate at which employees leave a workforce during a course of year and are replaced.

Welfare: It is an organized effort to ensure the basic well being of people in need. It is also a wide variety of services provided by companies for employee and in some cases for members of employee's families.

Work Environment: It indicates the physical geographical location as well as the immediate surroundings of the workplace or place of employment.

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Chapter 58
Examination of Quality of Life in Workplace Environments

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ABSTRACT

Healthcare organizations are commonly known to be high-stress environments due to the life-or-death nature of the work. Thus, examining the quality of life in healthcare professionals is of significance to the field. Quality of life is a common measurement in healthcare, typically in determining the effectiveness of treatment on patients. But, quality of life in healthcare workers is often overlooked. A review of the literature was conducted regarding factors that impact quality of life of workers in healthcare environments. The areas of occupational stress, burnout, and workplace violence were explored in depth in order to understand the potential negative consequences of each on quality of life in healthcare professionals. In comparison to other industries, healthcare professionals are at an increased risk for occupational stress, burnout, and workplace violence. Effectively managing these areas could have a positive impact on quality of life in healthcare workers.

INTRODUCTION

Understanding how to enhance satisfaction of employees in the workplace is of significance to managers, and quality of life is an important construct that relates to job satisfaction and overall wellbeing of employees. Quality of life is an estimate of an individual's health status, defined as satisfaction or happiness within eight dimensions: vitality, physical functioning, bodily pain, general health perceptions, physical role functioning, emotional role functioning, social role functioning, and mental health (Ware, Kosinski, & Gandek, 2000). Quality of life is a common measurement in healthcare, in determining the effectiveness of treatment on patients. But, quality of life in healthcare workers is often overlooked. Healthcare organizations are commonly known to be high-stress environments due to the life-or-death nature of the work. Thus, examining the quality of life in healthcare professionals is of significance, and is related to one of the Healthy People 2020 Occupational Safety & Health Objectives, which is to

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"increase the proportion of employees who have access to workplace programs that prevent or reduce employee stress" (Office of Disease Prevention and Health Promotion, 2017).

The objectives of this article are to identify and examine the factors that impact quality of life in healthcare professionals and to identify solutions and recommendations for how healthcare managers can assist in reducing the impact of these factors in the workplace. This topic is timely because the well-being of healthcare professionals is important to the effective functioning of the health system (Selanu, Thornicroft, Fekadu, & Hanlan, 2017). While there are many factors that impact quality of life, this article will focus on four factors that are most prevalent in healthcare settings: occupational stress, burnout, workplace violence, and employee well-being. Research has shown that occupational stress, burnout, and workplace violence all can have a significant impact on employee well-being and overall quality of life (Brandstatter, Job, & Schulze, 2016).

BACKGROUND

The Institute for Healthcare Improvement (IHI) introduced the Triple Aim- enhancing patient experience, improving population health, and reducing costs- as the model for optimizing performance in the health system (Berwick, Nolan, & Whittington, 2008). Recently, there has been increased interest in changing the Triple Aim to a Quadruple Aim, thereby addressing the goal of improving the life of healthcare professionals (Bodenheimer & Sinsky, 2014). This push for a change even further highlights the significance and timeliness of exploring the negative consequences that affect quality of life in healthcare professionals.

Often healthcare professionals find it difficult to seek help for their health problems for a variety of reasons, such as workload and the fear of stigma and adverse effects on their career (Brooks, Gerada, & Chalder, 2016). Particular types of healthcare professionals are even more susceptible to negative consequences that impact quality of life. For example, healthcare professionals working in an Intensive Care Unit (ICU) are at higher risk of stress, burnout, and anxiety (Vandevala, Pavey, Chelidoni, Change, Creagh-Brown, & Cox, 2017). Workplace violence is also an area of concern.

Healthcare managers have a pivotal role in healthcare organizations as they set the professional standard, oversee quality and training, and serve as role models (Maza, Shecter, Eizenberg, Segev, & Flugelman, 2016). According to the World Health Organization (WHO), "a healthy workplace is one in which workers and managers collaborate to use a continual improvement process to protect and promote the health, safety, and well-being of all workers and the sustainability of the workplace" (Burton, 2010). Thus, implications for how managers can assist in reducing stress, burnout, and workplace violence, and enhance employee well-being, will be explored.

FOCUS OF THE ARTICLE

Occupational Stress

Stress has been reported to be increasing in all full-time employees in the U.S. by as much as a 31% increase from 1983 to 2009 (Cohen & Janicki-Deverts, 2012). Stress can have a negative impact on individuals, such as mental health issues or burnout, and an impact on organizations, such as reduced

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performance and increased absences (Oginska-Bulik, 2006). Prior studies have surveyed healthcare workers and found that 28% reported stress to be a work-related health problem (Oginska-Bulik, 2006). In 2012, 63% of physicians surveyed reported they were more stressed than three years prior, and 34.3% reported being much more stressed than three years prior (Privitera, Rosenstein, Plessow, & LoCastro, 2014). A 2006 study by Oginska-Bulik concluded that there is a need for programs aimed to prevent work-related stress in healthcare organizations.

Occupational stress is the negative psychological response to job demands in the workplace and has been defined as a feeling of unease and discomfort that workers may experience when presented with extraordinary work demands and pressures (De Sio, Cedrone, Saruta, Ricci, Corbosero, Di Traglia, Greco, & Stansfeld, 2017). Occupational Stress has been reported at a prevalence of 52.7% in healthcare professionals (Kazmi, Amjad, & Khan, 2008). Other studies have also noted the significance of occupational stress and its relation to negative consequences in healthcare professionals (Gaither & Nadkarni, 2012). In a survey conducted in 2011, 87% of physicians reported that the leading cause of their occupational stress was due to paperwork and administration, and 63% reported that their stress is increasing (Bodenheimer & Sinsky, 2014). Healthcare managers should devise strategies to reduce the level of occupational stress and should provide support to healthcare professionals in order to help them deal with job-related stress (Sharma, Davey, Davey, Shukla, Shrivastava, & Bansal, 2014). If healthcare managers implement programs to reduce occupational stress in the workplace, the impact on quality of life in healthcare professionals could be significant. Intervention programs should be aimed at reducing an employee's experience of stressors (Awa & Plaumann, 2010).

Burnout

Burnout in healthcare professionals threatens the Triple Aim, as dissatisfied healthcare professionals are associated with lower patient satisfaction (McHugh, Kutney-Lee, Cimiotti, Sloane, & Aiken, 2011; Haas, Cook, Puopolo, Burstin, Cleary, & Brennan, 2000). Burnout has been defined as "physical or emotional exhaustion, usually caused by stress at work" (Felton, 1998, p. 238). Burnout is typically assessed in terms of three dimensions that develop in response to chronic work-related stress: emotional exhaustion, depersonalization, and reduced personal accomplishment (Maslach, Schaufeli, & Leiter, 2001). Emotional exhaustion refers to the draining of emotional resources (Rasumussen, Turnell, Butar, Juraskar, Kirsten, Wiener, Patenaude, Hoekstra-Weebers, & Grassi, 2016). Depersonalization is characterized by negative and cynical attitudes towards patients (Demerouti, Bakker, Nachreiner, & Schaufeli, 2000). Burnout is associated with a reduction in motivation, job satisfaction, and job performance (Parker & Kulik, 1995). Burnout can occur when individuals fail to effectively control work-related stress (Langade, Modi, Sidhwa, Hishikar, Gharpure, Wankhade, Langade, & Joshi, 2016). Prior studies have identified a relationship between quality of life and job performance (Rastegari, Khani, Ghalriz, & Eslamian, 2010). Another study attempted to explore the relationship between burnout, occupational stress, and anxiety symptoms. The results of the study found a positive correlation, thus authors recommend burnout management in order to reduce the impact of occupational stress (Ding, Qu, & Wang, 2014).

Prior research has found that as many as half of all U.S. physicians meet the criteria for burnout syndrome (Shanafelt, Hasan, Dyrbye, Sinsky, Satele, Sloan, & West, 2015). In a study conducted by Shanefelt et al in the U.S. in 2012, 7,288 physicians completed a survey in which 45.8% of the physicians reported at least one symptom of burnout. The results of the study showed an approximately 10% higher level of burnout in physicians as compared to the general study population (Shanafelt, Boon, Tan,

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Dyrbye, Sotile, Satele, West, Sloan, & Oreskovich, 2012). In addition, a 2011 study by the American Academy of Orthopedic Surgeons reported that, out of 2,000 North American physicians, 87% described themselves as being in a state of burnout on a daily basis (Rosenstein, 2012). Other studies have reported that the prevalence of burnout among all categories of healthcare professionals ranges anywhere from 12.6% to 29.9% (Abdulla, Al-Qahtani, & Al-Kuwari, 2011; Abdulghafour, Bo-hamra, Al-Randi, Kamel, & El-Shazly, 2011). Emotional exhaustion, which is a component of burnout, has been reported to affect 20.1% of healthcare professionals (Johnson, Osborn, Araya, Wearn, Paul, & Stafford, 2012).

Burnout syndrome is a public health issue, considering its impact on quality of life (Gil-Monte, 2009). Since burnout is linked to patient safety and quality of patient care, examination of the impact on quality of life is warranted (Carta, Preti, Portoghese, Pisanu, Moro, Pintus, Pintus, Perra, D'Oca, Atzeni, Campagna, Fabrici Pascolo, Sancassiani, Finco, D'Aloja, & Grassi, 2017). Particular specialties, such as pediatrics (Al-Youbi & Jan, 2013), oncology (Rasmussen, Turrell, Butar, Juraskara, & Kirsten, 2016), and ICU workers (van Mol, Kompanje, Benoit, Bakker, & Nijkamp, 2015), are at increased risk for burnout. Other studies have found burnout to be particularly prevalent in emergency department physicians, general internists, neurologists, and family physicians (Shanafelt, Boone, Tan, Dyrbye, Sotile, Satele, West, Sloan, & Oreskovich, 2012). In a survey conducted in 2014, 68% of family physicians and 73% of general internists reported that they would not choose the same specialty if they could start their careers over (Kane & Peckham, 2014). In a study conducted in 2011, 34% of hospital nurses and 37% of nursing home nurses reported burnout, compared with 22% of nurses working in other settings (McHugh, Kutney-Lee, Cimiotti, Sloane, & Aiken, 2011).

Burnout syndrome may be associated with negative consequences, such as anxiety (Ding, Qu, Yu, & Wang, 2014). Prior studies have found that healthcare workers have a greater risk of developing anxiety due to occupational stress (Fiabane, Giorgi, Sguazzin, & Argentero, 2013; Patel, Weiss, Chowdhary, Naik, Pednekar, Chatterjee, Bhat, Araya, King, Simon, Verdeli, & Kirkwoods, 2011) Anxiety is a psychological and physiological state that has been described as "a feeling of fear related to some uncertain or future event or mental distress that is caused by a threat to a person or his/her values" (Ding et al, 2014, p. 1). Other research has investigated whether burnout and depression are essentially the same thing and cover the same symptoms. Findings suggest that while similar symptoms may accompany both burnout and depression, that burnout is indeed a distinct problem (Bianchi, Schonfeld, & Laurent, 2014). Managers may be able to more easily recognize symptoms of anxiety and depression, which could indicate potential burnout in employees. The challenge for healthcare managers is to understand factors that would increase or decrease an employee's response to burnout (Rafii, Oskouie, & Nikraesh, 2004). If managers can identify employees who are showing signs of symptoms of burnout, anxiety, and depression, they can potentially implement interventions that could have a positive impact on the employee's quality of life.

Workplace Violence

Workplace Violence, such as bullying and harassment, is an occupational hazard in healthcare organizations that can lead to negative consequences, such as burnout and mental health issues (Lin, Wu, Yuan, Zhang, Jing, Zhang, Luo, Lei, & Wang, 2015). Workplace violence is defined as incidents where staff have been abused, threatened, or assaulted in job-related circumstances which impacted their safety, well-being, or health (ILO, ICN, WHO, & PSI, 2003). The World Health Organization (WHO) categorizes workplace violence into 2 types, physical violence and psychological violence (ICN, PSI, WHO, & ILO, 2002). Physical violence is defined as beating, kicking, slapping, stabbing, shooting, pushing,

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biting, and pinching; and psychological violence is defined as the threat of physical force against another person or group that can result in harm to physical, mental, spiritual, moral, or social development (Zhao, Liu, Ma, Jiao, Li, Hao, Sun, Gao, Hong, Kang, Wu, & Qiao, 2015). Prior studies have identified a relationship between workplace violence and quality of life (Wu, Lin, Li, Chei, Zhang, Wu, & Zhu, 2014; Chen, Huang, Hwang, & Chen, 2010), and have reported the incidence of workplace violence in the U.S. to be 78% (Benham, Tillotson, Davis, & Hobbs, 2011).

In 2010, the healthcare sector employed approximately 18.9 million workers (13.6% of the total workplace) making it the largest industry in the U.S. (Bureau of Labor Statistics, 2011). Additionally in 2010, the healthcare sector accounted for 11,370 nonfatal workplace violence injuries, with approximately 67% of nonfatal violent injuries occurring in all industries (Bureau of Labor Statistics, 2012). Over the last eight years, healthcare professionals on average accounted for 62% of the nonfatal workplace violence injuries that required time off from work (Bureau of Labor Statistics, 2012). The risk of healthcare professionals experiencing an assault that requires time off from work is 4.5 times greater than that of the general workforce (Bureau of Labor Statistics, 2012). The literature also suggests that the number of assaults is greatly underreported by healthcare professionals (Hartley, Ridenour, Craine, & Morrill, 2015).

Workplace violence has been reported to be a major problem for healthcare professionals globally (AbuAlRub & Al-Asmar, 2014). Prior studies have reported the prevalence of workplace violence to be as high as 89% (Boafo, Hancock, & Gringart, 2016; Franz, Zeh, Schablon, Kuhnert, & Niehaus, 2010). A study by Boafo in 2018 surveyed 592 nurses and found that 52.7% of participants reported having been abused verbally, and 12% reported having been sexually harassed in the workplace in the previous 12 months (Boafo, 2018). Workplace violence should not be tolerated, and managers should both recognize the issues and implement strategies in order to reduce occurrence and discipline the culprits.

Employee Well-Being

Occupational stress, burnout, and workplace violence can all impact employee well-being. Negative experiences and stress from workplaces often spill over into employees' personal lives, which impacts employee well-being (Yoo & Lee, 2018). Employee well-being (emotional and psychological) can be defined as employees' attitudes and lived experiences within the organization (Diener, 2000). Employee well-being can be conceptualized as subjective well-being, which refers to an individual's own cognitive and affective evaluation of their lives in terms of satisfaction with certain aspects, such as job satisfaction (Pasamar & Alegre, 2015). The fast-paced, demanding work environment in healthcare, and increasing demand for learning and using the latest technology, can lead to significant occupational stress and burnout in employees that impacts employee well-being (Raya & Panneerselvam, 2013). Burnout, in terms of exhaustion, has been most commonly used as a measure for employee well-being (Petrie, Gayed, Bryan, Deady, Madan, Savic, Wooldridge, Counson, Calvo, Glozier, & Harvey, 2018). Higher levels of burnout and exhaustion are more typical of lower levels of employee well-being. Prior research investigating the link between workplace violence and employee well-being found that employees who had greater exposure to workplace violence reported lower levels of quality of life (Yoo & Lee, 2018).

Managers play an important role in employee well-being. Research has consistently shown that a good social environment in the workplace is associated with employee well-being (Daniels, Watson, & Gedikli, 2017). Prior studies have found that creating an organizational culture that supports employees in their work and family roles is important for employee well-being (Odle-Dusseau, Herleman, Britt,

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Moore, Castro, & McGurk, 2013). Other research examining the importance of different aspects of manager support in healthcare settings highlighted the significance of the role of management in using organizational and team-level interventions to promote employee well-being (Petrie, Gayed, Bryan, Deady, Madan, Savic, Wooldridge, Counson, Calvo, Glozier, & Harvey, 2018).

SOLUTIONS AND RECOMMENDATIONS

Research studies have noted that the well-being of healthcare workers is dependent on the quality of their work environment (Portoghese, Galletta, Coppola, Fince, & Campagna, 2014), which is within a managers span of control. Studies have found that social support from managers can modify a healthcare professional's response to negative consequences, such as burnout (Rafii, Oskouie, & Nikravesh, 2014). Managers should focus on how to reduce stress, burnout, and workplace violence. In order to control risk of burnout, healthcare managers should use strategies aimed at increasing an employee's sense of control and reducing employee workloads (Portoghese, Galletta, Coppola, Finco, & Campagna, 2014). Healthcare managers can improve workers' sense of control by promoting their autonomy in the workplace, as job autonomy is considered an important coping strategy for decreasing occupational stress (Karasek & Theorell, 1990; Hausser, Mojzisch, Niesel, & Schulz-Hardt, 2012). Other recommendations for managers include providing support to employees to assist them in better dealing with the demands experienced in the workplace, and providing employees with training to help them deal with challenges faced at work (Gauche, de Beer, & Brink, 2017). Managers can also implement training programs in areas such as stress management and conflict management. There is some evidence that individual-focused web-based interventions relaxation and mindfulness techniques are effective for supporting employee well-being and reducing occupational stress (Ryan, Bergin, Chalder, & Wells, 2017).

FURTHER RESEARCH DIRECTIONS

Additional research in the area could explore further ways in which managers can improve each of these areas in order to reduce the impact on quality of life in healthcare professionals. Future research should also examine the impact of stress and burnout in healthcare managers, and how the stress level of managers impacts the quality of life in healthcare professionals. A lot of emphasis in research is placed on the support that employees need from managers, but one area that has not received a lot of attention in the support that managers need in order to know how to support employee well-being. Further research investigating how best to train and support managers in creating a supportive culture for employees is needed.

CONCLUSION

Quality of life in healthcare professionals can be significantly impacted by negative consequences in the workplace, such as occupational stress, burnout, and workplace violence, which can in turn impact employee well-being. Improving quality of life in healthcare professionals can have a substantial impact on their job satisfaction, thus improving patient care delivery.

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While there are many factors that contribute to quality of life, research has consistently studied the impact of occupational stress, burnout, and workplace violence on employee well-being and quality of life. Many researchers have noted the significance of the impact that issues such as stress and burnout can have on well-being and quality of life. The involvement of healthcare managers in identifying these issues and reducing their impact in the workplace may be the key to improving quality of life in healthcare professionals.

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KEY TERMS AND DEFINITIONS

Anxiety: A feeling of worry or fear that is associated with nervousness and restlessness.

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Burnout: A state of physical or emotional exhaustion that is typically the result of stress.

Occupational Stress: Stress that is particularly related to a person's job.

Quality of Life: The overall well-being of an individual in terms of things such as physical health, life satisfaction, and job satisfaction.

Stress: Physical, mental, or emotional tension caused by a situation.

Well-Being: The overall physical, mental, and social wellness of a person.

Workplace Violence: Verbal or physical threats against a person in a workplace.

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Chapter 59
Effects on Employee Motivation of Working Conditions in National/International F&B Enterprises: Kirklareli Case

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ABSTRACT

The purpose of this research is to examine the effect of variables on the working conditions of national/international chain F&B enterprises on employee motivation. One hundred and sixty-four people working in 11 chain F&B enterprises in Turkey, in Kırklareli province, participated in the survey. The sampling method was used easy sampling for research. The research was conducted by applying survey technique from quantitative research methods. Regression analysis, factor analysis, Mann Whitney U, and Kruskal Wallis analysis were performed in the analysis of the obtained data. As a result of the factor analysis performed, two different components were obtained under working conditions and three different components were obtained in the context of motivational variables. As a result of the simple linear regression analysis performed, it is found that a significant part of the change in the motivation variable depends on the working conditions. Research results are thought to be beneficial to F&B managers.

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INTRODUCTION

In rapidly changing world economies, the consumption habits of individuals are also rapidly changing. Food and beverages also have their share in this development. This change has made it crucial to examine the working conditions and motivations of employees in these service-based businesses. The improvement of working conditions leads to the increased motivation of businessmen, to improve their jobs, and thus to increase the quality of services they offer to foreign customers.

In particular, managers can improve employee productivity by improving working conditions, and promote occupational motivation in the positive direction. Increased motivation of the employees and increase in organizational performance will also be achieved. In other respects, it will be possible to reach the goals and objectives of the enterprises more effectively and in a short time. Managers will be able to make positive changes by utilizing various motivational tools in line with the needs of their workplaces. It is important for the managers to increase the confidence in the workplace in terms of working conditions in order to increase the motivation of the employees in the food and beverage sector, to ensure the satisfaction of the worker on the wage satisfaction, to remove the inequalities by the justice perceived in the workplace, to improve the quality of work and life of the occupation and finally to be appreciated in the workplace. The discovery and examination of these elements play a vital role in the success of both managers and businesses.

For this reason, in this research, the working conditions of the national/international chain food and beverage companies in the province of Kırklareli were determined to influence the motivation of the employer and the aim of contributing to both the managers and the field writers was taken into consideration. In the first part of this study, a literature review of working conditions and motivation theories in the business were included, then to research methodology, analyzes, findings and finally results.

LITERATURE REVIEW

Today, when the situation of the labor market is examined, it is known that positive physical working conditions positively affect work performance and business productivity. There is a wide range of elements within the working conditions in the subject (Yüksel, 2003 car. from İzgi & Olcay, 2008). While working conditions are assessed in different sectors, they are considered as fees, working hours, job security, vocational training opportunities and the physical working environment when they are considered in terms of food and beverage operations (Albayrak, 2012: p. 34). Within the context of working conditions, Küçükoğlu (2015: p. 177) states that there is a positive relationship between organizational trust and ethical values and between employee productivity and organizational trust and ethical values. As a result, it is formed in the expectation of "equal pay for equal work", and it is possible for the employees who do the same job to receive the same salary fee. As a result, it is possible to provide a fee-paying feeling for employees who work in the same job, which is shaped in the expectation of "equal pay for equal work" (Yıldırım & Demirel, 2015: p. 137). It is known that various research is based on working conditions and motivation in the literature (Hayta, 2007; Soykenar, 2008; Avcı, Çubukçu, & Çalmaşur, 2014). Motivation is discussed and conceptualized by many researchers. The concept of motivation is often reflected in similar definitions by many scientists (Rahman, Shamsudin, & Karim, 2014: p. 298). According to the definition of Eren (2008: p. 494), motivation is defined as efforts to mobilize one or more individuals for a specific purpose. According to Özkalp and Kırel (2013), it is called motivation

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for people to behave with their own desires and wishes to realize a specific purpose. In other words, motivation means to influence the occupation in order to perform its duty in the desired way (Başaran, 1984 nar. from Ergül, 2005: p. 69). Motivation is addressed in two ways as internal and external (Özgener, 2000: p. 177). Usually, internal motivation is defined as doing something for its own good (Reiss, 2012). Workers are motivated by the work itself (Brief & Aldag, 1976 nar. from Dündar, Özutku, & Taşpınar, 2007: p. 108). Also, internal motivation includes success, promotion, development, and responsibility (Kaş, 2012: p. 16). According to Vom Diemer (1994), an external motivation which is an impulse for certain purposes directly affects behaviors (Özgener, 2000). Indeed, wage, working conditions, job security, company management and politics, conditions that are required in the workplace such as status are included in external motivation (Kaş, 2012: p. 16). Eren (2003) indicates that some points below should be explained with regard to motives (Bolat, Seymen, Bolat, & Erdem, 2014: p. 229-230):

- It is a force to reveal the true meaning of the motives behind human behavior. Some similar behaviors may be shifted from different motivations, and some different behaviors may result from the same instinct. For example, similar individual efforts to promote may result from different motives in different individuals. For one of these, success is the predecessor, while in the other the motivation to win is decisive. On the other hand, two people who are motivated to achieve self-esteem and respect can behave differently in this common motive direction. For example, the one is trying to achieve this by showing a high performance; the other can be used as a means of being close to the direction time.
- The motives influence each other and human behavior by either completing the other or reducing the power. For example, the motivation to achieve and gain power can complement each other, while the ability to achieve socialization and power can diminish each other's influence.
- Motives may increase/decrease as they are satisfied or not satisfied, as they appear at different violence ratings. For example, the severity of the organizational security need of an experienced and experienced employee will not be the same as the person who starts the new job. Some needs do not disappear with satisfaction, and they are even stronger. Satisfaction may not affect this motive. For example, while the motivation for success is getting more and more satisfied, the intensity of the basic motives (eating and drinking) decreases as they are satisfied.

Motivation is an important factor in organizational behavior as a factor that significantly influences, directs, and causes human behavior in an organization. As a result, research on organizational behavior has been carried out on a daily basis, and various approaches have been developed (Örücü & Kambur, 2008: p. 85-86). It is seen that the managers who have accepted modern contemporary business approach have started to investigate in a scientific way that motions can be motivated effectively and efficiently in the workplace. It is known that the economic and psycho-social motivation components, which are two important components of motivation during these research, cause different theories to emerge (Özkalp & Kırel, 2013). These theories are divided into content and process theories (Bilge, Bal, & Gönlügür, 2015). The focus of content theories is on individual needs (Tınaz, 2006; Keser, 2006). Maslow's Needs Hierarchy is one of the most well-known of the content theories, characterized by five steps: physiological needs, security needs, belonging and love, value need, and self-realization (Kula & Çakar, 2015: p. 193). According to Maslow, as long as the lower level needs of the individual are not overcome, the upper-level needs do not act for individual behavior. In addition, completed the needs diminishes the power to motivate the individual (Güney, 2011). Another content theory is Herzberg's

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Dual Factor Theory. Herzberg summarizes the motivation factors in two groups as motivating factors and hygiene factors. While motivating factors include responsibility, status, achievement, and recognition, the hygiene factors contain wage, working conditions, premium and supervisory style (Bolat, Seymen, Bolat, & Erdem, 2016). Alderfer (1969), on the other hand, expanded ERG theory to redefine Maslow's basic needs and rearranged as the need for existence, the need for improvement and the need to build relationships. Alderfer proposed ERG theory according to the results of empirical studies to explain the relationship between human desires and needs satisfaction (Yang, Hwang, & Chen, 2011: p. 7886). Finally, McClelland's theory of achievement requires comprising the need to establish relationships with others, the need for empowerment, and the need to succeed (Koçel, 2001: p. 515). Tolman's "Expectancy Theory" suggests that motivation depends on the individual's specific needs (goals) and the expectation that these needs are met through productive behaviors. In other words, productivity should be seen as a way of achieving worthwhile goals; Behavior is dependent on the output the individual values, and the individual is the anticipation of a particular behavior, the individual will direct this output. For example, if the individual needs more money, and if there is an expectation that more money will be paid for his or her work, we can assume that this individual will work harder; The opposite is true (Huczynski & Buchanan, 1991 nar. from Bolat, Seymen, Bolat, & Erdem, 2014: p. 239).

On the basis of process theories, there is a discussion of the handling and examination of all variables over the period from the onset of behavior (Tınaz, 2006; Keser, 2006). One of the process theories, Vroom's Theory of Expectations establishes a direct relationship between rewards and performance in order to understand the needs of organizations, as well as determines the effect of the awards in direct proportion to the extent to which individuals who will receive the prizes want the prize (Şeker, 2014: p. 15). Another process theory is Lawler-Porter's Motivation Model. This theory has examined the relationships among many of the components previously discussed separately. These variables are the prize worth, the perceived effort-prize potential, effort, talents, job performance, role perceptions, prizes, perceived equal prizes and satisfaction (Onaran, 1981). The other motivational process theory is Adams' Equation Theory and Hackman and Oldham's Job Characteristics Model (Ball, 2012: p. 4-5). According to the theory developed by J.S. Adams, the success and satisfaction of an individual depend on the equality or inequality he/she perceives in the workplace (Koçel, 2001: p. 524).

While the above-mentioned theories constitute the theoretical background, some incentive tools emerge for increasing motivation for occupations. These incentive tools do not always show the same effect everywhere. The motivational tools that are determined as the result of the research are examined under four headings: economic tools, psycho-social tools, organizational and administrative tools. While economic instruments are divided into wage increase, premium wage, profit participation and economic reward, psycho-social tools are defined as independence, social participation, value and status, development and success, adaptation to the environment, proposal system, psychological assurance and social endeavors. Organizational and managerial tools are divided into purpose group, education and promotion, transfer of authority, participation in decisions, communication, business expansion and enrichment and improvement of physical conditions (Sabuncuoğlu & Tüz, 2008). According to Ferman (1966), motivation, job satisfaction and commitment to employees can be grouped into three groups:

1. **Economic and Fiscal Measures:** Job appraisal and measures to pay salaries and wages (according to the liaison) as employees deserve;
2. **Physical and Material Measures:** Efforts to improve work or workplace working conditions;

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3. **Spiritual-Social Measures:** Are measures to ensure that personnel can establish the most appropriate human relations within the enterprise.

For example, creating a warm friendly atmosphere, providing a sense of belonging provides integration (Mucuk, 2003: p. 346). It is necessary for managers to provide and protect organizational justice in order to increase the welfare of employees in organizations. If employees do not operate and evaluate managers fairly; demonstrate significant negative behaviors such as escape from responsibility, showing social, spiritual, bodily discomfort and disorders, showing hostile attitudes, leaving work (İyigün, 2012: p. 60). Özgen (2002) points out that the quality of work-life is related to the self-life; Motivation, level of satisfaction, personal experience, etc. (Kılıç & Keklik, 2012: p. 148). Kılıç & Keklik (2012: p. 158) suggest that work-life quality and motivation are two inseparable concepts and that a positive development in a variable will affect the other in a positive way. In the study of Yıldız et al. (2014: p. 241), it is seen that the factors that motivate the employees are the work itself, the relations with the supervisor, the possibilities of promotion, wages, and working conditions, rewarding and appreciated. According to research results of Ölçer (2005), job security, good relations with supervisor, wage and appraisal system based on a fair performance, cooperative and trust-based relationships with colleagues, appropriate working environment, teamwork, giving important/attractive jobs appropriate to the individual ability and job rotation affects the level of motivation of service personnel positively. It was also found that there was a significant positive correlation between motivation level and performance level. As a result, the de-motivated individual does not want to produce information, can't exhibit their skills fully and avoid taking responsibility. It is necessary to create awareness to awaken instinct so that it can reveal its own abilities (Altındağ & Akgün, 2015: p. 282).

METHODOLOGY OF STUDY

Aims, Objectives, and Hypotheses

Satisfaction levels of today's customers seem to be closely related to the behavior of employees in F&B enterprises. Businesses should utilize incentive motivational tools to improve work conditions of employees in order to increase customer satisfaction. In this way, managers will increase the motivation of the employees and ensure that the employees will work more efficiently and efficiently. For these reasons, it has been tried to determine the effect of working conditions on motivation on the F&B enterprises. Theoretically, the hypotheses for F&B enterprises are as follows:

H1a: The attitudes of the employees in the national/international chain F&B enterprises to their working conditions differ according to gender.
H1b: The motivational attitudes of employees in national/international chain F&B enterprises differ according to gender.
H2a: The attitudes of the employees in the national/international chain F&B enterprises to their working conditions differ according to marital status.
H2b: The motivational attitudes of employees in national/international chain F&B enterprises differ according to marital status.

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H3a: The attitudes of the employees in the national/international chain F&B enterprises to their working conditions differ according to the way they work.
H3b: The motivational attitudes of employees in national/international chain F&B enterprises differ according to the way they work.
H4a: The attitudes of the employees in the national/international chain F&B enterprises to their working conditions differ according to age.
H4b: The motivational attitudes of employees in national/international chain F&B enterprises differ according to age.
H5a: The attitudes of the employees in the national/international chain F&B enterprises to their working conditions differ according to income.
H5b: The motivational attitudes of employees in national/international chain F&B enterprises differ according to income.
H6a: The attitudes of the employees in the national/international chain F&B enterprises to their working conditions differ according to the working time.
H6b: The motivational attitudes of employees in national/international chain F&B enterprises differ according to the working time.
H7: There is a positive and significant relationship between working conditions and motivation variables of national/international chain F&B enterprises.

Population and Sampling

This research was conducted to measure the motivational effect of the working conditions of the employees in national/international chain F&B enterprises operating in the province of Kırklareli. A purposeful sampling method has been applied to the research because it is the method of purposeful sampling that will reach the researcher's purposes quickly and easily (Kozak, 2014: p. 118). Within the scope of the research have been reached all of the employees working in national /international chain F&B enterprises in the province of Kırklareli (Center) and a total of 12 national/international chain F&B enterprises and 164 employees in these enterprises have participated in the research. The research is limited to April-May 2016.

Data Collection Tool

In this study, survey method was applied as data collection tool. The questionnaire refers to a method of data acquisition by responding participants to a set ranking and structured questions (Coşkun, Altunışık, Bayraktaroğlu, & Yıldırım, 2015). The scale items in the study of Albayrak (2012) were used for this study. The questionnaires were applied face to face with the employees. The scale items obtained from the studies were reviewed by three faculty members and made more understandable and faster to perceive. Thus, the content validity of the scale was ensured (Ural & Kılıç, 2013: p. 67). In the first part of the questionnaire, there were 19 items related to working conditions while in the second part there were 20 items related to motivation. In the last section, there are statements about the demographic variables of the employees. Variables involving working conditions and motivation in the questionnaire are presented with the Likert scale of 5 (1 = Absolutely not, 2 = Not agreeing, 3 = Neither agree nor disagree, 4 = Agree, 5 = Absolutely agree) (Churchill & Iacobucci, 1999: p. 249). The Likert scale is a metric that is equally spaced to show the extent to which participants participate in certain expressive forms (Kozak,

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2014: p. 77). The data for the study were collected from 164 employees working in national/international chain F&B enterprises in the province of Kırklareli between April-May 2016.

Table 1. Names of F&B enterprises and employees numbers

Names of F&B Enterprises	Employees Numbers
David People	20
Kahve Diyarı	13
Kahve Tiryakisi	14
Big Mamma's	15
Burger King	7
Dominos Pizza	10
İzabella Pizza	20
Kahve Durağı	12
Gönül Kahvesi	8
Henry Jones	20
Kahve Kültürü	25
Total	164

Analysis of Data

Method part of the research includes the population and sample, the validity and reliability of the data collection method and technique, descriptive statistics, Factor Analysis, Mann-Whitney U and Kruskal Wallis Analyzes. First of all, missing data analysis was performed for the scales included in the questionnaire. Lost values are filled with average. In addition to this, extreme value controls have been made. In order to determine whether the factors are appropriate for parametric analyzes, it was tested whether the items showed normal distribution. The skewness and kurtosis values of each item were decided not to meet the normal distribution criterion as they were not within the desired limits, 2.0 and 7.0 (Curran, West, & Finch, 1996), respectively. Kolmogorov-Smirnov and Shapiro-Wilk test results were also examined. Since the significance level of these tests is smaller than 0.05, the normal distribution is not suitable (Yazıcıoğlu & Erdoğan, 2014: p. 246-247; Çokluk, Şekercioğlu, & Büyüköztürk, 2010: p. 14) and thus non-parametric analyzes have been decided.

Analysis and Findings

40.2% of the respondents were female, 59.8% were male and the most participating age range was 26-30 (57.9%). 15.2% of the employees are married, 84,8% are single. Most of the respondents were working less than 1 year (61.6%) while working, and most of them were working full time (62.2%). While most of the respondents work in the service department, the highest income range is TL 1251-1500 (45.7%).

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Table 2. Demographic findings of employees

(N=164)	Number	%
Gender		
Women	66	40,2
Man	98	59,8
Age		
Less than 25	95	57,9
26-30	50	30,5
31-35	5	3,0
36-40	6	3,7
41-45	4	2,4
46 and over	4	2,4
Marital Status		
Married	25	15,2
Single	139	84,8
Income		
Less than 750 TL	2	1,2
751-1000 TL	16	9,8
1001-1250 TL	55	33,5
1251-1500 TL	75	45,7
1501 TL and over	16	9,8
Working Style		
Full time	102	62,2
Part time	62	37,8
Department		
Hot kitchen	16	9,8
Cold kitchen	2	1,2
Bar	13	7,9
Service	111	67,7
Stewarding	8	4,9
The other	14	8,5
Working Time (Year)		
Less than 1	101	61,6
1-3	51	31,1
4-6	10	6,1
7-9	2	1,2

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Factor Analysis

For the research, data collected from 164 employees in national/international chain F&B enterprises operating in Kırklareli province were evaluated with the help of SPSS for Windows 22 statistical package program. Principal Component Analysis was used to find factor structures of working conditions and motivation scales, and Varimax was chosen as the rotation method. As a result of the Factor Analysis applied to the items containing working conditions, the items with less than 0,40 items, 6 overlapping items (6,17, 19) and the items with no load value were excluded from the analysis and there are remaining 16 items including two factors (F1: Confidence, F2: Wage Satisfaction). As a result of Factor Analysis applied to the motivational items, the items that are below 0.40 from 20 items, the overlapping items (3,14,19) and the items with no load value (item 2) are excluded from the analysis. As a result, there are 16 items including three-factor dimensions remaining from 20 items (F1: Workplace Justice, F2: Quality of work life, F3: Appreciation). It is seen that the contribution of the two factors constituting working conditions to the variance is 33,162%. It is accepted that the sample size was 0.736 with the KMO value being appropriate for factor analysis (Alpar, 2011: p. 286) and according to the Bartlett Sphericity test ($x^2 = 816,520$, df = 171), it was assumed that the data came from a normal distribution (Şencan, 2005: p. 384). It is seen that the contribution of the three factors forming the motivation to the variance is 43,821%. It was found that the sample size was fit to the factor analysis with a value of 0.777 (Alpar, 2011: 286) and according to the Bartlett Sphericity test (x^2= 634,476, df= 136), it was assumed that the data came from a normal distribution (Şencan, 2005: p. 384). The reliability coefficient (Cronbach Alpha) takes a value between 0 and 1, and if this value approaches 1, reliability increases (Ural & Kılıç, 2013: p. 280; Coşkun, Altunışık, Bayraktaroğlu, & Yıldırım, 2015). The Cronbach Alpha values of the following table are between .806 and .503. Alpar (2011: p. 815) express that Cronbach's Alpha coefficient is high between 0.80-1.00, very reliable between 0.60-0.79, low between 0.40-0.59 and in not reliable between 0,00-0,39. Factor load values 0.60 and higher load values are high; the load value between 0.30-0.59 can be defined as moderate magnitudes (Büyüköztürk, 2002: p. 474). When Table 3 is examined, it is seen that the factor load values are between .811 and .442.

According to the result of factor analysis, F1: Confidence dimension with 23,096%, which explains the highest variance within the Working Conditions, was formed by combining 9 items. The F1: Workplace Justice dimension, with 25,562% explaining the highest variance in motivation, was formed by a combination of 7 items. Factor dimensions of the Working Conditions are F1: Confidence dimension (x = 3.9512) and F2: Wage Satisfaction (x = 2.8206). Motivation factor dimensions are F1: Workplace Justice (x = 3,3249), F2: Quality of Work-Life (x = 3,8122), F3: Appreciation (x = 3,0915). As a result, participants' attitudes towards Confidence from Working Conditions are higher than Wage Satisfaction. In terms of motivational factor dimensions, the attitudes of employees towards Quality of Work-Life were found to be higher than those of Workplace Justice and Appreciation.

Analysis of Working Condition Components Within Hypotheses

Mann Whitney U test was used to test for the differences in gender, marital status and working style of the workers, and age, duration of work, differences between the departments and the genders were tested with the Kruskal Wallis test.

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Table 3. Results of factor analysis on working conditions and motivation

Factors of Working Conditions*	Factor Loading	Eigenvalue	% of Variance	Cumulative %	Mean (X)	Cronbach Alpha
Confidence		4,388	23,096	23,096	3,9512	
I have a peaceful working environment in my business or department.	,677					
I have the opportunity to train and develop myself in the department I work with.	,650					
The working environment is regular and the tools/materials used are adequate.	,645					
I can use my weekly and annual leave.	,622					
I can cooperate with my managers and other colleagues in the fields of information, experience, and assistance when I work.	,619					,796
My fee is paid on time.	,593					
I can easily get permission when I need to use extra permission in special circumstances.	,568					
I believe that my managers respect my personality and profession.	,561					
Working hours applied to the business I work for are suitable for me to work efficiently.	,463					
Wage Satisfaction		1,913	10,067	33,162	2,8206	
My fee is very high.	,743					
The wage I have received is exactly what I am doing.	,683					
My fee is raised very often.	,574					
My fee is sufficient for my normal expenses.	,489					,646
My Fee is suitable when compared to another employee.	,468					
I have free transportation in my business.	,461					
I believe that you will receive severance pay when it comes to taking off work.	,442					

continues on following page

According to Table 4, it is seen that the p values are larger than 0.05. For this reason, Working Conditions and Motivation variables do not change according to gender. “Confidence”, “Wage Satisfaction”, “Workplace Justice”, “Quality of Work-life” and “Appreciation” are not significant factors in terms of gender. According to these results, $H1_a$ and $H1_b$ hypotheses were rejected.

According to Table 5, it is seen that the p values are larger than 0.05. For this reason, working conditions and motivation variables do not change according to marital status. While the $H1_b$ hypothesis is rejected, it is seen that the dimensions of “Confidence”, “Wage Satisfaction”, “Workplace justice”, ” Quality of Work-life ” and “Appreciation” are not important factors in terms of marital status. According to these results, H_{2a} and H_{2b} hypotheses were rejected.

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Table 3. Continued

Motıvatıonal Factors **	Factor Loading	Eigenvalue	% of Variance	Cumulative %	Mean (X)	Cronbach Alpha
Workplace Justice		4,346	25,562	25,562	3,3249	,806
In my department, there is not a distinction between employees.	,726					
I can express my emotions, thoughts, and behaviors sufficiently in my workplace.	,683					
It is at the level I want the advancement possibilities.	,675					
I have the right to participate in the decisions taken in my department	,670					
There is fair discipline in my business.	,651					
Those who do well in the business have the chance of a fair promotion.	,642					
I have complaints when there are applications that I am not satisfied with, and there are fair solutions.	,573					
Quality of work-life		1,726	10,150	35,712	3,8122	,564
We pay more attention to monetary awards than spiritual awards.	,607					
The physical working environment in our business contributes to motivation.	,563					
The training facilities provided at the workplace are satisfactory.	,556					
Providing a bonus for important days (holiday, feast etc.) to a successful staff is a motivating factor.	,552					
In my business, the work done is distributed fairly among the employees.	,477					
Appreciation		1,379	8,109	43,821	3,0915	,503
If my business allows them to develop themselves and their talents to their work, the success will increase.	,811					
Employees in my business are important, and employees on special occasions (like birthdays) are remembered.	,573					
The increase in monthly income is an important factor in increasing my motivation.	,495					
It is very important for the successful person to be heeded, appreciated and praised by the managers.	,489					

* (N = 164; Varimax Rotation Base Component Factor Analysis; KMO = 0.736; p <.000; x2 = 816,520, df = 171).

** (N = 164; Varimax Rotation Base Component Factor Analysis, KMO = 0.777, p <.000; x2 = 634,476, df = 136).

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Table 4. Mann Whitney U analysis results by gender

Factors	Gender	N	Mean Rank	U	Z	p
Confidence	Women	66	88,23	2856,000	-1,271	,204
	Man	98	78,64			
Wage Satisfaction	Women	66	84,64	3093,000	-,474	,636
	Man	98	81,06			
Workplace Justice	Women	66	91,08	2668,000	-1,904	,636
	Man	98	76,72			
Quality of Work- Life	Women	66	82,11	3044,000	-,088	,930
	Man	98	82,77			
Appreciation	Women	66	85,95	3044,000	-,768	,443
	Man	98	80,17			

(*p<0,05)

Table 5. Mann Whitney U analysis results according to marital status

Factors	Marital Status	N	Mean Rank	U	Z	p
Confidence	Married	25	96,26	1602,000	-1,578	,115
	Single	139	80,03			
Wage Satisfaction	Married	25	86,14	1646,500	-,417	,676
	Single	139	81,85			
Workplace Justice	Married	25	89,84	1554,000	-,417	,400
	Single	139	81,18			
Quality of Work- Life	Married	25	80,88	1697,000	-,187	,400
	Single	139	82,79			
Appreciation	Married	25	89,26	1568,500	-,776	-,776
	Single	139	81,28			

(*p<0,05)

Table 6. Results of Mann Whitney U analysis according to working style

Factors	Working Style	N	Mean Rank	U	Z	p
Confidence	Full Time	102	84,19	2989,500	-,586	,558
	Part Time	62	79,72			
Wage Satisfaction	Full Time	102	92,23	2989,500	-3,372	,001*
	Part Time	62	66,50			
Workplace Justice	Full Time	102	86,72	2731,500	-1,465	,143
	Part Time	62	75,56			
Quality of Work Life	Full Time	102	78,82	2786,500	-1,283	,200
	Part Time	62	88,56			
Appreciation	Full Time	102	78,82	2145,000	-3,463	,001*
	Part Time	62	88,56			

(*p<0,05)

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When p values according to Table 6 are examined, it is seen that only p values of "Wage Satisfaction" (U=2989,500; z= -3,372; p=,001) and "Appreciation"(U=2145,000; z= -3,463; p=,001) variables are less than 0.05. There is a significant difference between the Wage Satisfaction and "Appreciation" variables and Working Style groups. Accordingly, although the H_{3a} and H_{3b} hypotheses are accepted, the "Wage Satisfaction" and "Appreciation" dimensions appear to be important factors in terms of Working Style. Full-time employees have a higher "Wage Satisfaction" than part-time employees, but lower attitudes towards "Appreciation".

Table 7. Kruskal Wallis analysis results by age

Factors	Age	N	Mean Rank	sd	x^2	p
Confidence	Less than 25	95	79,93	5	5,655	,341
	26-30	50	91,86			
	31-35	5	62,20			
	36-40	6	62,83			
	41-45	4	61,63			
	46 and over	4	102,25			
Wage Satisfaction	Less than 25	95	80,72	5	,904	,970
	26-30	50	86,68			
	31-35	5	80,30			
	36-40	6	72,08			
	41-45	4	88,88			
	46 and over	4	84,50			
Workplace Justice	Less than 25	95	85,59	5	3,298	,654
	26-30	50	77,19			
	31-35	5	58,30			
	36-40	6	85,83			
	41-45	4	78,25			
	46 and over	4	104,88			
Ouality of Work-Life	Less than 25	95	77,07	5	21,991	,001*
	26-30	50	102,52			
	31-35	5	35,30			
	36-40	6	88,75			
	41-45	4	23,25			
	46 and over	4	70,00			
Appreciation	Less than 25	95	81,32	5	,934	,968
	26-30	50	81,83			
	31-35	5	82,20			
	36-40	6	87,08			
	41-45	4	96,63			
	46 and over	4	98,38			

(*p<0,05)

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A statistically significant difference (p>0.05) was not found between the working conditions dimensions and age according to Table 7. Accordingly, although the H1e hypothesis is not accepted according to the age, it is seen that "age" is not an important factor in terms of the Working Conditions. However, as seen in Table 7, " Quality of Work-Life ", a statistically significant difference was found between age groups (p <0.05). The Mann Whitney U test was used to determine which groups were significant differences in the Kruskal Wallis test. Statistically significant difference (p <0.05) was found between less than 25 and the age group of 26-30 (U = 16446,500; z = -3,054; p =, 002). In this respect, it was found that the persons with less than 25 years of age (M.R. = 65.33) had lower attitudes in terms of "Quality of Work-Life " than the persons in the age group of 26-30 (M.R.= 87.57). According to these results, H_{4a} hypothesis is rejected and H_{4b} hypothesis is accepted.

Table 8. Kruskal Wallis analysis results by income

Factors	Income	N	Mean Rank	df	x^2	p
Confidence	Less than 750 TL	2	143,00	4	4,160	,385
	751-1000 TL	16	74,66			
	1001-1250 TL	55	79,45			
	1251-1500 TL	75	83,71			
	1501 TL and over	16	87,56			
Wage Satisfaction	Less than 750 TL	2	69,75	4	11,170	,025*
	751-1000 TL	16	57,41			
	1001-1250 TL	55	73,24			
	1251-1500 TL	75	93,64			
	1501 TL and over	16	88,81			
Workplace Justice	Less than 750 TL	2	77,00	4	1,411	,842
	751-1000 TL	16	75,19			
	1001-1250 TL	55	80,84			
	1251-1500 TL	75	86,83			
	1501 TL and over	16	75,94			
Ouality of Work-Life	Less than 750 TL	2	129,75	4	8,242	,083
	751-1000 TL	16	95,78			
	1001-1250 TL	55	76,80			
	1251-1500 TL	75	87,23			
	1501 TL and over	16	60,75			
Appreciation	Less than 750 TL	2	104,00	4	7,380	,117
	751-1000 TL	16	61,50			
	1001-1250 TL	55	75,57			
	1251-1500 TL	75	91,35			
	1501 TL and over	16	83,13			

(*p<0,05)

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According to Table 8, there was a statistically significant difference (p <0.05) in the variable of "Wage Satisfaction" according to income variable. Accordingly, "Wage Satisfaction" seems to be an important factor in income variable. The Mann Whitney U test was used to determine which groups were significant differences in the Kruskal Wallis test. In terms of "Wage Satisfaction", between TL 751-1000 and TL 1251-1500 (U = 333,500, z = -2,788, p =, 005), between TL 1001-1250 and TL 1251-1500 (U = -2,456; p =0,014) statistically significant difference (p <0.05). In this respect, it is seen that people whose income level is between 751-1000 TL (M.R.=29,34) have lower Wage Satisfaction than people with income level between 1251-1500 TL (M.R.=49,55), it was found that people with income levels between 1001-1250 TL (M.R.= 56.05) had lower Wage Satisfaction levels than people with income level between 1251-1500 TL (M.R.=72.43). According to these results, the H_{5a} hypothesis is accepted and the H_{5b} hypothesis is rejected.

Table 9. Results of Kruskal Wallis analysis according to working time

Factors	Working Time (year)	N	Mean Rank	df	x^2	p
Confidence	Less than 1	101	76,75	3	4,170	,244
	1-3	51	90,16			
	4-6	10	98,95			
	7-9	2	95,25			
	10 and over	0	0			
Wage Satisfation	Less than 1	101	75,77	3	7,339	,062
	1-3	51	89,43			
	4-6	10	112,75			
	7-9	2	94,50			
	10 and over	0				
Workplace Justice	Less than 1	101	80,23	3	1,713	,634
	1-3	51	83,46			
	4-6	10	94,50			
	7-9	2	112,75			
	10 and over	0	0			
Quality of Work-Life	Less than 1	101	79,41	3	7,560	,056
	1-3	51	92,18			
	4-6	10	79,15			
	7-9	2	8,50			
	10 and over	0	0			
Appreciation	Less than 1	101	74,82	3	9,408	,024*
	1-3	51	90,37			
	4-6	10	111,55			
	7-9	2	124,25			
	10 and over	0	0			

(*p<0,05)

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According to Table 9, the statistically significant difference (p <0.05) was found in "Appreciation" variable. "Appreciation" seems to be an important factor in the Working Time variable. The Mann Whitney U test was used to determine the groups in which the significant differences in the Kruskal Wallis test were found. There was a statistically significant difference (p <0.05) between the groups of 4-6 years and less than 1 year (U = 281,000; z = -2,320; p =, 020 with the "Appreciation". Individuals who worked less than 1 year (M.R. = 53.78) in this regard appeared to have lower attitudes toward "Appreciation" than those who worked 4-6 years (M.R. = 78.40). According to these results, H_{6a} hypothesis is rejected and H_{6b} hypothesis is rejected.

Analysis Result Measuring Motivation Effect of Working Conditions

According to Table 10, the simple linear regression analysis between working conditions and motivation was significant, but the H7 hypothesis was accepted. In other words, it was found that 49.2% of the motivational change (F = 157,010, p <0,000) was dependent on working conditions.

Table 10. Simple linear regression analysis results measuring the effect of working conditions on motivation

Independent Variable	Beta	Stand. Beta	T Value	Significance
Working Conditions	,777	,702	12,530	, 000

(* p<,001, R^2=,492)

CONCLUSION AND SUGGESTION

In today's rapidly developing F&B industry, innovations are added to national and international chains. Managers working in these chains are required to provide a suitable environment for the functioning of the workforce effectively and efficiently. With the improvement of the physical working environment and the motivational tools, the managers can help their employees to provide better quality, efficient and efficient. As seen in this research result, working conditions affect motivation positively. This result is in agreement with the results of Albayrak's (2012) study. The important results of the study are listed below;

- According to the results of the research, while Working Conditions constitute Confidence and Wage Satisfaction dimensions, the dimensions of motivation are defined as Workplace Justice, Quality of Work-Life and Appreciation dimensions.
- The other end result of the research: attendees' attitudes towards Confidence are higher than Wage Satisfaction. The fairness of the managers, the efficient passing of the meetings, the efficient operation of the business are the basic issues of working conditions. Wage Satisfaction plays a significant role in satisfaction and in the loyalty of the employees (Türkay, 2015: p. 254). The attitudes of employees towards Quality of Work-Life were found to be higher than those of Workplace Justice and Appreciation. The fairness of the managers is one of the important factors affecting the workplace loyalty (Türkay, 2015: p. 252).
- Among the other results of the study, Working Conditions and Motivation variables do not change according to sex, marital status variables. These results are in agreement with the results of

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Albayrak (2012: p. 109-110), Ertan and Kaya (2012). On the contrary, research results of Duman et al. (2006) revealed that it was found that males had higher average scores than women in their desire to make a career in the sector, person-industry harmony and promotion opportunities, subsidiarity and motivation, managerial and colleague dimensions.

- There was a significant difference in terms of factors between full-time and part-time occupational groups according to their working styles. According to this, while full-time employees are more attitudes towards Wage Satisfaction than part-time employees, attitudes towards appreciation are lower. Parlak (2016) suggests that it is important but not sufficient to work flexibly in terms of a healthy Quality of Work-Life and that various measures should be taken to reduce the negative.
- Another result is that there is no statistically significant difference according to the age of employees. This result is in contrast to the research results of Albayrak (2012: p. 112). However, in the results of the study, in contrast to the Working Conditions, Quality of Work-Life from Motivational dimensions shows a statistically significant difference between age groups. In this respect, the age group with less than 25 years of age appears to have a lower attitude towards Quality of Work-Life than the 26-30 age group.
- Besides these results, the wage satisfaction shows a statistically significant difference according to the income variable. In this respect, it was found that people with an income level between 751-1000 TL had lower Wage Satisfaction than people with an income level between 1251-1500 TL, and people with an income level between 1001-1250 TL had lower Wage Satisfaction than those with an income level between 1251-1500 TL. These results are in agreement with the results of Albayrak (2012: p. 112).
- When the results of the research are examined, Appreciation variable shows statistically significant difference according to the Working Time (year). In this respect, it was found that individuals with less than one-year working time had lower attitudes toward appreciation than those with 4-6 years working time. On the other hand, Türkay (2015: p. 251) indicates that job satisfaction will decrease as the number of years of work increases.
- Finally, it was found that 49.2% of motivational change depends on working conditions. According to Hayta (2007: p. 22), productivity decreases due to motivation and fatigue in employees arise due to long working hours and poor working conditions. Workplace conditions including physical environment, time, groups, social facilities, management style, etc. affects employees' motivation factors and creates a complicated situation in terms of motivation (Karakaya & Ay, 2007: p. 55).

Considering the research results, the following suggestions have been developed for business managers in the F&B enterprises:

- Administrators' continuous improvement of working conditions can be useful for employees. It is known that the managers who attach importance to the workplace recreation, especially today, have increased the efficiency of their workplaces.
- Managers should increase the quality of work-life as an element of motivation, organize physical conditions, educational opportunities, monetary rewards, premium and so on.
- Based on the results of the research, managers should take into consideration that managerial trust comes first of all.
- Managers should re-examine their motivational tools according to younger age groups.

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- Employees who are new in the first year of their working period can often make mistakes, they may show beginner behavior, and they may think they are not appreciated. However, it is very important for managers to decide whether or not the employee will continue to work if they are role models that show more motivating behaviors to the new employees.

FUTURE RESEARCH DIRECTIONS

The fact that it is impossible to reach the whole of the population due to labor, time and cost pressures constitutes the limitation of the research. Since this research is carried out with a limited number of samples and includes only national/international chain F&B enterprises in Kırklareli Province, it is not possible to generalize the results obtained under the working conditions and motivation literature. For this reason, future research may include new research with a larger target population of the study, including national/international chain food and beverage businesses in other countries.

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KEY TERMS AND DEFINITIONS

Appreciation: Feelings of gratitude for things done.

Confidence: The concept of confidence is the belief that someone is behaving correctly.

F&B Enterprises: F&B enterprises are independents establishments that provides food and beverage services.

Motivation: The motivation is the continuity of the individual's efforts to reach the target.

Quality of Work-Life: Work-life quality is aimed at improving the quality of life of employees by increasing the effectiveness of organization.

Wage Satisfaction: The wage/pay satisfaction is satisfaction level of employees' salaries.

Working Conditions: Working conditions are the basis of paid employment and employment relations. In general, working conditions include subject and subject matter in a wide range of physical conditions and mental demands at work as well as hourly wages.

Workplace Justice: The concept of workplace justice is provided for every individual who works for organizational justice.

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Chapter 60
The Effect of Wellness Programs on Long-Term Contract Employees' Workplace Stress, Absenteeism, and Presenteeism

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ABSTRACT

The quasi-experimental study reported in the present article is aimed at increasing the understanding of the effects of long-term contract employees participating in wellness programs. The reported study examines the effect (if any) that a wellness program has on workplace stress, absenteeism, and presenteeism for long-term contract employees participating in a wellness program. A one group pretest-posttest design was used. Convenience sampling was conducted in a hospital in the New York City Metro area. Data was collected from 19 participants. Paired sample t-test and a Wilcoxon signed-rank test were used to determine if there was a significant statistical difference before and after a dance aerobic exercise intervention. The instruments used to gather data were the Perceived Stress Scale (PSS) and the World Health Organization Health Performance Questionnaire (HPQ). The results indicated a statistical difference for workplace stress, but no statistical difference for absenteeism and presenteeism.

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INTRODUCTION

Stress in the workplace is a common and perennial issue. High levels of stress are strongly associated with a myriad of health problems. White-collar professionals, who account for 51% of the total United States (US) workforce (Department of Professional Employment, American Federation of Labor-Congress of Industrial Organization, 2015) are at a higher risk for chronic disease such as diabetes, heart attacks, and obesity (Corliss, 2015; The University of Kansas Health System, 2017). Chronic disease is one of the leading causes of death in the U.S. (Lee, Pierre, Zhu, & Hu, 2014) and results in high annual health care spending including $432 billion on heart disease and stroke, $245 billion on diabetes, and $154 billion on lung disease (Lee et al., 2014). Following increased costs associated with chronic disease, health insurance spending has significantly increased (Sambamoorthi, Tan, & Deb, 2015). Health insurance spending was estimated at $330.9 billion in 2003, and $850 billion in 2010 (Office of the Assistant Secretary for Planning and Evaluation [ASPE], 2005; Schoenman & Chockley, 2013). From 2003 to 2010, the annual employer premium contribution for health insurance for employees with families increased by 73%, and for single employees by 60% (Collins, Radley, Schoen, & Beutel, 2014).

The monetary costs of stress related chronic diseases are not constrained to the cost of health care. Within organizations, costs associated with stress and illness manifest as high rates of employee absenteeism and presenteeism. Absenteeism undermines organizational success. Absenteeism, as defined by Senel and Senel (2012, p.1144) is the "lack of presence of an employee for planned work" and does not include absence that is planned. Swarnalatha and Sureshkrishna (2013, p. 1) define and explain absenteeism as "failure to report to work… Absenteeism is a type of unscheduled activity which threatens the organization to fall in danger as it leads to the disruption of the daily process." Absenteeism usually refers to habitual or conscious decision to not be at work and is considered a type of deviant workplace behaviour (Sureshkrishna, 2013). There is evidence that wellness programs can significantly reduce absenteeism (Abdullah & Lee, 2012).

Presenteeism, can be considered opposite to absenteeism. It refers to being present at work even if ill or unfit for attending work (Dew, Keefe, & Small, 2003). While presenteeism might be viewed in a more positive light than absenteeism, it can be just as destructive as absenteeism, to both organization and employee (Dew, Keefe, & Small, 2003). Presenteeism results in greater morbidity and other illnesses such as depression, and evidently productivity during the workday is reduced (Dew, Keefe, & Small, 2003).

Both employers and employees suffer when an employee is absent from work. According to Society for Human Resource Management (2015), productivity loss due to unplanned absences is 36.6%, planned absences 22.6%, extended absences 34%, and hiring replacement workers 31.1%. The SHRM (2015), has shown employees' absence contributes to increased workload of other employees by 69%, with an additional 61% increase in stress, 59% increase in disruption of other work, 40% decrease in quality of work, and 29% increase in overtime.

The productivity loss cost to employers of employees suffering from chronic illness totals $225.8 billion annually: $1,685 per employee, per year (NCCDPHP, 2016b; CDC, 2017e). Adults with one or more chronic diseases accounted for 86% of health care expenditures in 2010 (NCCDPHP, 2016a). According to Lee et al. (2014), the cost per year of treating individuals with no chronic disease was $2,137; one or more chronic diseases costs $2,243 per year, compared to $21,183 per year for treatment of individuals with five or more conditions. Adults with no chronic conditions cost Medicare $211 per year, whereas adults with one or more chronic conditions cost Medicare an average of $13,973 per year (Lee et al., 2014). According to CDC (2017e), the U.S. healthcare expenditure in 2015 was $3.2 trillion,

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with 75% ($2.5 trillion) going toward treatment of chronic diseases (Koh, 2011; Lee et al., 2014). During testimony before the U.S. Senate Committee on Health, Education, Labor, and Pensions, Harold Koh, Legal Adviser for the United States Department of State, stated "chronic disease causes the loss of $1 trillion in economic output annually" (Koh, 2011).

Given the negative impact of both absenteeism and presenteeism on individual and organizational success, and that wellness as a factor which reduces both, it is small wonder that organizations have brought into focus employee well-being. Organizations have turned to wellness programs as a way of addressing workplace stress and reducing employee absenteeism and presenteeism (Harris & Strauss, 2016; Purcell, 2016; Rossi, 2010). The 2009 Affordable Care Act (ACA) provides initiatives built upon expanding existing corporate wellness programs. The U.S. Department of Health and Human Services (HHS), Department of Labor (DOL), and Department of the Treasury (DOT) implemented new rules in January 2014 supporting workplace wellness programs.

Employee stress is strongly associated with chronic health issues and other illnesses. Stressed or unwell employees have high rates of absenteeism and/or presenteeism during which their productivity falls. For organizations, reduced productivity is very costly. In addition, there are the healthcare costs that are borne by the nation. Long term contract employees constitute as a significant portion of employees, and their stress and resulting absenteeism and/or presenteeism is very costly to both organizations and the nation. For non-contract employees, there is solid evidence that participation in wellness programs has positive health and well-being effects.

Research has exposed a positive correlation between employees who participated in a wellness program and reduction of workplace stress (Berry, Mirabito, & Baun, 2010). According to Bloom (2008), United Parcel Service's wellness programs and safety education programs have decreased absenteeism, increased productivity and morale, and reduced on-the-job injuries by 60%.

Staffing companies employ 3.21 million temporary and long-term contract people per week; a total of 14.49 million temporary and long-term contract employees were hired in 2016 (ASA, 2017). The direct and indirect costs of employees missing work due to stress negatively impact on an organization's financial success. Direct costs include employee's wages/salary earned during absence, overtime costs, and replacement worker costs. Indirect costs are lower productivity of replacement workers, and productivity loss of co-workers and supervisors (Society for Human Resource Management [SHRM], 2015). Direct cost accounted for 30.8% of total costs, with 15.4% going to payroll, 8.1% paid time off, 5.7% overtime cost, and 1.6% replacement workers (SHRM, 2015). Wellness programs provided options to lower health premiums and deductibles, while at the same time decreasing workplace stress, thus improving employees' well-being, self-image, and self-esteem, as well as job satisfaction (CDC, 2017b; NCCDPHP, 2016b). Organizations are investing in wellness programs to counteract loss of productivity, and to lower health insurance premiums (CDC, 2017d).

Yet, despite their importance, the effects of wellness programs on long-term contract employees are under-explored and remain poorly understood. Studies conducted on the effects of wellness programs on workplace stress, absenteeism and presenteeism did not include long-term contract employees (Bierla, 2013; Merrill et al., 2012; Yang et al., 2015). It cannot be assumed that wellness programs will have the same effect on long-term contract employees as non-contract. The implications of this are that wellness policy and organizational decisions may be misaligned with the specific needs of long-term contract employees, and therefore be ineffective or not as effective as can be. Since long-term contract employees make up a very significant portion of the workforce, the consequences of poor-decision making with

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respect to wellness programs has the potential for far-reaching negative impact on organizations and individuals.

It is from the above described background that the reported study emerges. The aim of the study is to shed further light on the effect of wellness programs on the neglected subgroup of employees – long term contract employees. A population of 19 long-term contract employees in the healthcare industry were exposed to a wellness intervention, and the effect (if any) on workplace stress, absenteeism and presenteeism was investigated. The researcher sought to ascertain if there was a difference in dependent variables on workplace stress, absenteeism, and presenteeism before and after participation in the wellness program. Prior to discussing results and their implications the research design and methods are presented.

RESEARCH DESIGN AND METHODS

The study was designed as a one group pretest-posttest non-randomized trial. Participants were given two surveys, a Perceived Stress Scale (PSS) and Health Performance Questionnaire (HPQ). One group pre-test and post-test research design was used. Pre-, Post-, test research designs are commonly used in behavioral sciences to assess change in behavior (Gliner, Harmon, and Harmon, 2003). The test was administered pre-intervention and 30-days post-intervention.

Recruitment and Participants

The population of interest for the study was long-term contract employees who work in healthcare organizations, offering wellness programs in the New York City Metropolitan Area. Long-term contract employees were identified as employees who have an active employment contract with a company for one to two years at 40 hours per week. An invitation to participate in the study was sent via email. A total of 20 individual agreed to participate in the study.

Before the intervention, all participants were emailed survey links to complete the PSS and HPQ. Afterwards, they underwent the dance aerobic intervention. They participated once a week dance exercise for one hour. After 30 days another email with the survey links were sent to the participants, to complete the PSS and HPQ.

Intervention

The intervention for study consisted of dance aerobic exercise. The intervention was a 60-minute dance aerobic classes that was given once a week by a trained and certified instructor. The number of days and the amount of time the participants attended the wellness program during the 30-day intervention were tracked.

Measurement and Instruments

Two survey instruments were used in the study: HPQ and PSS. Survey items consisted of both numeric-completion, and Likert-based responses. The HPQ is a three-part questionnaire with 91 questions: Part A (health), Part B (work), and Part C (demographic). Part A has 57 questions that evaluate participants' self-rated health and self-rated mental health, physical health status, mental health, new physical health

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status, and their history of medical visits within the last year. Part B has 23 questions that focus on hours worked, sick leave, and occupational accidents, and self-rated productivity in the four past weeks; and lastly, Part C asked eight demographic questions (Pournik et al., 2012).

The PSS is one of the most common psychological instruments used for measuring individuals' self-perceived and non-specific stress. The instrument was chosen for its effectiveness in gauging participants' pre-intervention and post-intervention workplace stress levels. The survey is a 14-item self-report questionnaire designed to assesses an individual's determinates of stress (Cohen, 2016). Using the five-point Likert scale score, PSS ranges vary from "never" to "very often"; with seven value questions (4, 5, 6, 7, 9, 10, & 13). All 14 items are added to score PSS (Cohen, 2016).

Data Analysis

Data analysis was performed using the IBM SPSS 25. Initial analyses were performed, including assessment of the data for normal distribution and outliers. For small samples (<30), K-S and Shapiro-Wilks is the recommended test for normal distribution (Ghasemi & Zahediasl, 2012). The variables, workplace stress, absenteeism, and presenteeism were tested for normal distribution. A p-value that is greater than .05 indicates normal distribution, less than .05 the data is not normally distributed. The paired sample *t*-test was used for workplace stress, and the Wilcoxon Signed Rank test for absenteeism and presenteeism. The Wilcoxon signed-rank test is a non-parametric test applied to two dependent variables (Rey & Neuhäuser, 2014). The paired sample t-test is used to determine if the mean difference between two observations on the same data set is zero, or in other words to test if there is a statistically significant difference between pre- and post-intervention scores.

Limitations

Several limitations were identified during this study including sample size, duration of the intervention, length of HPQ, employment agency relocation, lack of random selection and random assignment to treatment and control group, statistical test. Data analysis showed there was an effect cause by participating in a wellness program and reducing workplace stress, but there was no effect on absenteeism, and presenteeism among participants. There was only one campus that was used for this study; therefore, the sample size for long-term contract employees involved was small.

Using a non-parametric test is ideal for small sample size that is not normally distributed and have outliers that the researcher cannot removed from the data. However, a non-parametric statistical test is less robust than a parametric test. Nonparametric test lacks statistical power compared a parametric test. Unlike parametric test that estimates the effect of the intervention, nonparametric test focused on hypothesis testing (Whitley & Ball, 2002).

According to Cohen (1992) the statistical power is based on the significance criterion, sample size, and the effect size. Cohen (1992), stated a small effect size is .20, the medium effect size is .50, and large effect size is .80. Replicating the study with a larger sample size and a longer intervention could show a significant differences pre-and-post intervention. With a large sample size, the researcher is more likely to reject the null hypothesis, however, the small sample size for this study was the probable cause for Research Question 2 and 3 null hypotheses not rejected due to a Type II Error occurring (Cohen, 1992; Jack, 2017). According to Cohen (1988), the researcher will use the power to make a correct decision to reject the null hypothesis. To determine the sample size the power analysis is necessary (Cohen, 1992).

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For the intervention, 30 days was not enough time to effect long-term contract employee's workplace stress, absenteeism, and presenteeism. Another drawback associated with this study was the timeframe. At the end of the summer and close to the first day of school, participants with family are more likely to take a vacation, which created delays in collecting data before and after the intervention. A third limitation identified was the length of the HPQ survey. Participants were either skipping questions or taking several days to complete the survey. Using the seven-day HPQ questionnaire would be more beneficial for collecting data before and after for a short intervention.

A quasi-experimental designed was adopted for this study, as it afforded the researcher the ability to determine whether there are any significant changes from the intervention. However, limitations associated with quasi-experimental design is the inability for the researcher to use random selection and random assignment to treatment and control groups. Unlike true experiment, the researcher could only make casual inference that the intervention had an impact on workplace stress but cannot determine whether any outside factors contributed to the changes pre-and post-intervention.

A lack of control group was also a limitation for this study. A control group is identical to the treatment group, except the control group is not subjected to the treatment. Having a control group in the study would strengthen the researcher ability to draw conclusions from study. The researcher could determine whether the intervention has a significant effect on the treatment group. Furthermore, a control group will help reduce the researcher from drawing an inaccurate conclusion that the intervention had any effect on the treatment group.

The final limitation is the relocation of participants. One participant was lost to follow-up, because of relocation by their agency. With a small sample size (N=19) losing participants would affect the power, effect size, and significant of the study. Increasing the sample size may provide a statistical difference.

Results

The majority (70%) of respondents were above 40 years of age. Just over half of the respondents were female and half the respondents completed more than four years of college. Half of the participants reported as single. Sixty percent of respondents had children with most (35%) having just one child. All participants rated their general health as good or better. Ninety percent of participants rated their mental health as good or better (see Table 1).

Workplace Stress

Paired samples statistics displayed workplace stress scores from pre-dance aerobic exercise intervention ($M = 22.1$, $SD = 9.81$) and post 30 days dance aerobic intervention ($M = 30.26$, $SD = 6.78$). The mean increase was -8.16 with the 95% confidence interval for the difference between the means of -3.07 to -13.24. The means demonstrates a statistical difference between the levels of workplace stress among participants post-dance aerobic exercise intervention compared to pre-dance aerobic exercise intervention (see Table 2).

The results of the paired sample *t*-test show that there is a statistical difference in workplace stress among the group represented in this study, $t(18) = -3.37$, $p < .05$, $d = .77$, indicating there is a significant effect on workplace stress. The null hypothesis for this research question was rejected. Thus, the mean scores for workplace stress was statistically significantly higher post-intervention than the pre-intervention.

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Table 1. Demographic characteristic of long-term contract employees

Variable	Category	Percentage	Frequency (*N*=20)
Age	29-40 41-50 51-61	30 35 35	6 7 7
Gender	Male Female	45 55	9 11
Marital Status	Married Separated Divorced Single	25 5 20 50	5 1 4 10
Children	None One Two Three Four or More	40 35 5 15 5	8 7 1 3 1
Education	Some High School Some College College Grad 4-year College Plus	5 20 25 50	1 4 5 10
General Health	Excellent Very Good Good Fair Poor	10 35 55 - -	2 7 11 - -
Mental Health	Excellent Very Good Good Fair Poor	15 35 40 10 -	3 7 8 2 -

Table 2. Paired samples test

		Paired Differences							
		M	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		*t*	df	Sig. (2-Tailed)
					Lower	Upper			
Pair 1	Workplace stress	-8.1579	10.5529	2.42099	-13.244	-3.0716	-3.37	18	0.003

Absenteeism and Presenteeism

The finding for the Wilcoxon signed-rank test showed that a 30-day, dance aerobic exercise did not elicit statistically significant in absolute absenteeism in long-term contract employees (Z = -1.58, p = .804), relative absenteeism (Z = -.517, p = .1.00), absolute presenteeism (Z = -1.324, p = .388), and relative presenteeism (Z = -.377, p = 1.00). Therefore, the null hypothesis was retained (Table 3).

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Table 3. Test statistics of pretest and posttest scores on long-term employees absenteeism and presenteeism

	Absolute Absenteeism (Pretest and Posttest)	Relative Absenteeism (Pretest and Posttest	Absolute Presenteeism (Pretest and Posttest)	Relative Presenteeism (Pretest and Posttest)
Wilcoxon *W*	37.50	58.00	22.50	46.50
Z	-1.577	-.517	-1.324	-.377
Exact. Sig (2-tailed)	.804	1.00	.388	1.00

DISCUSSION

The results of the data presented in this study revealed no statistical differences pre- and post-intervention for absenteeism and presenteeism. With a small sample size, and relatively short timeframe, the researcher could not determine that the intervention had an impact on long-term contract employee's absenteeism and presenteeism. However, there was a statistical difference for workplace stress. The differences in mean for workplace stress pretest - posttest is evident in the increase of 30.26 in the posttest mean. The pretest – posttest mean scores indicated that participating in the intervention affected the dependent variable. The difference in mean scores between the group pretest- posttest was -8.16.

There is evidence of the benefits of wellness programs have on employee job productivities (Miller, 2015). These studies also showed that a comprehensive wellness program have a positive effect on employee's health, stress, absenteeism, and presenteeism (Abdullah, Yin & Lee, 2012). But surprisingly, the effect of exercise in the reported study was an increase in post-intervention stress. This is contrary to what is reported in literature around workplace stress and exercise. Although this is not an expected result, it does prove a useful outcome in that stimulates thinking about why this might have been the case and provides direction for some further research.

One potential explanation for the outcome relates to the promotion of exercise to employees. The health facility has a wellness program for their employees, however in this research context the wellness program was not effectively promoted to employees. Moreover, some aspects of a wellness programs that do exist in the facility primarily focused on patients, and not employees. The wellness programs that did exist consisted of yoga, meditation, smoking cessation, and nutrition and weight loss programs. It may be that the dance program did not align well with the needs of this particular context.

For a wellness program to be effective in changing the hospital culture, there are several factors that should be considered. Hospitals and healthcare system that have effective wellness programs have aligned the program to the strategic goals of their organization, supported participation by providing incentives, provided a strong multiyear financial commitment to sustain the program, and include an evaluation process (Health Research & Educational Trust, 2015). The success of a wellness program relies on strong support and commitment from senior leadership of the organization (Health Research & Educational Trust 2015).

An effective wellness program can help the hospital achieve the Occupational Safety and Health objective of Healthy People 2020 in the United States (Health Research & Educational Trust, 2015; Office of Disease Prevention & Health Promotion, 2018).

In light of the result that workplace stress increased after the dance class intervention, one question that might be raised is: "Are there differences in preference between long term contract and non-contract employees as to the type of wellness program? The need for further research to compare the effect of

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different wellness programs between long-term contract, and non-contract employees, is now evident. Furthermore, the result of the research also points to the need for studies which collect contextual data as well as intervention data. A mixed methods research methodology is recommended as it will give depth of insight into quantitative results. Mixed methods will give important insights into contextual factors and address questions such as "Were there other significant events occurring in the workplace at the conclusion of the intervention which lead to increased stress levels?"

CONCLUSION

The purpose of study was to investigate the effect (if any) of long-term contract employees participating in an intervention on workplace stress, absenteeism and presenteeism. This study focused on whether long-term contract employees stress levels, absenteeism and presenteeism were affected by the aerobic dance intervention from August 1, 2018, to August 31, 2018. Results showed effect on stress levels but no effect on absenteeism and presenteeism. The most valuable outcome of the study is identification of potential further research considerations on wellness and long-term contract employees.

Limitations that were identified were sample size, duration of the intervention, length of HPQ, employment agency relocation, lack of random selection and random assignment to treatment and control group, and lack of control group, statistical test, and job relocation. Consequent recommendations include future research, which expands the number of long-term contract employees, and number of campuses, to increase the sample size. The use of a mixed method design would be beneficial to future research to further insight into the effects of a wellness program and any phenomena that influences participants' behavior and attitudes.

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Chapter 61
Leisure and Wellness Perceptions of Tourism Workers in Work-Life Balance

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ABSTRACT

In this study, the concepts related to leisure and wellness perceptions will be discussed in order to provide the work-life balance of tourism workers. With a descriptive analysis, it will be discussed how leisure time evaluation and wellness perception contribute to the work-life balance of tourism employees as strategies to cope with work and non-work problems. The fact that the work-life balance of tourism employees is at an optimum level is of great importance for the tourism industry where business factor and service quality are critical. Factors such as uncertainty environment, low labor morale, and high turnover rate constitute the general business life characteristics of tourism employees. As a result, the effect of leisure and wellness perceptions of tourism employees on coping with these factors and establishing work-life balance will be discussed in the light of related literature.

INTRODUCTION

The low level of well-being of tourism employees in business and non-business life is an important factor that will adversely affect business performance. Difficult working conditions brought about by intense and uncertain competition environment in tourism enterprises, stress and similar negative emotions caused by radical changes in social structure and family life, it causes individuals to be "unhappy". It is impossible for a person to be in full well-being in societies where work and life safety cannot be ensured, there is no possibility of finding a job, and the unrest created by the imbalance of income distribution is not resolved (Kesgin and Topuzoğlu, 2006, p.47; Araz et.al.,2007, p.112). The biggest strength of the

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tourism enterprises in the service sector is its employees. Akıncı (2002) states that the factors that affect the job satisfaction of the employees of tourism enterprises are psycho-social factors. The voluntary / self-sacrificing behaviors of employees beyond the normal defined job descriptions in their relations with the guests of enterprises will increase the competitiveness of the enterprises. This situation depends on the high \ balance of well-being of tourism workers not only in their work but also in their non-work lives.

Work-life balance is primarily related to the ability of the employee to maintain control between work and non-work life and to balance these two different living spaces so that they do not adversely affect each other. The intense pace of work and uncertainty in tourism enterprises may cause this balance not to be found. Therefore, wellness perceptions of tourism workers are negatively affected. The American Council on Exercise (2000) states that creating free time during the day enables employees to renew themselves psychologically and emotionally and increases their work performance. Tourism enterprises have long working hours, dynamical structure, stress caused by service problems developing beyond the control of employees, problems in customer relations are problems in maintaining work-life balance. These factors lead to unhealthy and low moral morale, conflicts and stress levels. The most important help of the employees in coping with such promotions is the recreational activities they participate in work or non-work time (Mokaya and Gitari, 2012). Abe et al. (2016) found that there is a significant relationship between wellness programs and work-life balance strategies.

Recreation can be defined as all kinds of activities that individuals do in order to increase their well-being in leisure periods (in business life or non-business time) reserved for them. Individuals who have achieved awareness of the physiological, psychological and sociological positive effects of the activities as a result of participation in recreational activities can achieve long-term happiness. The benefit of achieving a balance between leisure and work has been demonstrated by examining many variables, such as spending time with family and friends in leisure, important factors of goodness, social and family adjustment (Brown et.al. 2011, p.45). Mbaabu (2013) found that physical fitness programs improve job quality, job performance, productivity and morale, mental health programs reduce stress and anxiety, improve mental ability awareness, and entertainment programs increase group commitment, team performance and productivity. It showed that fitness, mental health and entertainment have an impact on employee performance and well-being.

Wellness refers to optimal health rather than disease-free health (Rančić et.al., 2013). Individuals deal with many chronic diseases (sugar, heart, blood pressure, obesity, etc.) in their daily lives, as well as psychological (anxiety, anxiety, stress, etc.) and social (loneliness, social interaction anxiety, etc.). The point of dealing with these problems and encountering is the fact that the incidents seen at certain ages in the past are encountered at every age and area today. Therefore, it is also important to adopt preventive treatment / therapy practices and to increase awareness of individuals on these issues and to support them with state policies. The perception of classical health in individuals physician, operation medication and so on. has evoked concepts such as regular nutrition, ati-aging, beautification, and being fit with changing health consumer awareness. Healthy living is an active process that enables people to become conscious and make choices against a more conscious existence. (www.nationalwellness.org). Stress factors (irregular nutrition, environmental pollution, unfavorable working conditions, deterioration of family unity, economic uncertainty, etc.) that individuals encounter and cannot overcome or manage in their daily lives cause problems in socio-psychological well-being as well as negative physiological consequences (Zengin, 2018). Wellness plays an important role in evaluating the leisure time of individuals from past to present, preserving and improving their health (physiological, psychological, sociological). Wellness focuses on minimizing the effects of the three dimensions of stress that individuals are most

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exposed to today's conditions and that adversely affect their health, p. physical stress (causing irritation to the nervous system), chemical stress (causing body toxicity), and mental stress (especially triggering hormonal changes in the adrenal glands) (Rančić et.al., 2013). Employee wellness reflects the reality that an employee is in contact with others and the world and finds meaning in work and life. Employees are often unable to leave work-related issues at work, but also carry them out of work (Bumhira et.al,2017, p.223). Therefore, leisure activities play an important role in ensuring the work-life balance of the employees and contribute to increasing their well-being.

It is stated that the relationship between individuals' participation in leisure activities and wellness perception is positive. Because the individual's well-being is closely related to his lifestyle. Wellness aims to identify health-enhancing factors and to make changes in the way individuals live in this direction. Leisure activities, on the other hand, make a significant contribution to the positive changes in the lives of individuals and to increase their well-being at this point.

Particularly, individuals have the opportunity to participate in open leisure activities, to eat healthy foods, to do their daily physical activities, to get rid of the stresses caused by their daily lives, to clean and improve their bodies. Outdoor leisure program participation helps individuals to be free from alcohol, drugs, tobacco and even refining from processed food (detoxification) (Carpenter and Harper,2016). Many studies in the relevant literature indicate that the participation of leisure activities in young people (or disabled youth) provides many positive benefits such as prevention of metabolic problems, development of physical functions, prevention of obesity, strengthening of friendships, development of skills and competences, and support for creativity (Voruganti et. al.,2006; Murphy and Carbone,2008; Trainor et.al.,2010). Granello (2001) found that between 18-22 young adults and adults aged 35-77 years, younger adults had higher levels of well-being.

In this study, the concepts related to leisure and wellness perceptions will be discussed in order to provide the work-life balance of tourism workers. With a descriptive analysis, it will be discussed how leisure time evaluation and wellness perception contribute to the work-life balance of tourism employees as strategies to cope with work and non-work problems. The fact that the work-life balance of tourism employees is at an optimum level is of great importance for the tourism industry where business factor and service quality are critical. Factors such as uncertainty environment, low labor morale and high turnover rate constitute the general business life characteristics of tourism employees. As a result, the effect of leisure and wellness perceptions of tourism employees on coping with these factors and establishing work-life balance will be discussed in the light of related literature.

WORK-LIFE BALANCE IN TOURISM WORKERS

Tourism enterprises are undergoing continuous change and renewal process due to changing consumer tendencies and environmental factors that directly or indirectly affect tourism. In this process, businesses are constantly improving their service quality in order to attract new tourists and to protect existing tourist profiles, and to provide their employees with an appropriate working environment and to make them available and to attract qualified personel. Poor conditions in hospitality businesses, low wages, low probability of retention of qualified personnel and low status make it difficult to attract and retain employees. With these features, hospitality businesses host high levels of stress factors for employees (Mansour and Tremblay,2016). Hospitality is a highly stressful sector due to its highly labor-intensive, includes intensive rotations, work overload, anti-social working hours, intensive contacts with custom-

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ers, and highly emotional labor characteristics (Tsaur and Tang,2012). The length of workplace hours determines the extent to which employees are exposed to hazards such as unfavorable working conditions and toxic substances. The length of working hours and overtime causes shorter employee renewal times. If employees cannot charge themselves mentally and physically, this leads to physical and mental deterioration. Overtime and shift working hours in the workplace lead to disruptions in the sleep patterns of the employees, as well as disruption of circadian rhythms (sleep / wake cycle) associated with biological functions such as hormone disorder and sleep (Brauner et al, 2019, p. 2). Burnout is one of the most important problems arising from the negative workplace conditions of tourism workers. Burnout causes loss of resources in the process of managing work and leisure roles. Individuals with scarce resources are less likely to solve work-leisure problems and psychological well-being levels (Tsaur and Yen, 2018, p. 122). It is stated that there are differences between generations of tourism workers and job satisfaction, loyalty and turnover rate (Park and Gursoy,2012; Tsaur and Yen,2018). Compared to the Baby Boomers and X generations, Millennians say they have a greater desire for flexible work, greater relaxation and enough time to participate in leisure activities (Park and Gursoy, 2012). When Millennials are interfering in their spare time and their perceptions of inability to relax, their level of satisfaction decreases and their psychological well-being is negatively affected (Tsaur and Yen,2018). Lin et al. (2014) found that work-leisure conflict positively affects job burnout, negatively affects leisure time participation and well-being, leisure time participation is positively related to well-being, and burnout is negatively related to well-being. Similarly, Tsaur and Yen (2018) found that work-leisure conflict negatively affects leisure satisfaction, psychological well-being and job satisfaction in their study of Taiwan tourism workers.

Work-life balance involves the effective management of multiple responsibilities at work, at home and in different living spaces (Naithani, 2010). Darcy et al. (2012), the work-life balance "one size fits all" state that is not a concept. They state that work-life balance is a subjective concept that needs to be designed in accordance with the goals of individual satisfaction, participation and time balance. Therefore, each employee should use strategies that will contribute to work-life balances in all career stages. An individual's life is not limited to family life, but also includes other aspects of work, sports, personal development and leisure. Work-life balance is the harmony between the amount of time, commitment and effort when an individual devotes to work and non-work activities (Lazar et al., 2010). Good management of work-life balance leads to an increase in job and life satisfaction due to positive impact on employee health (Malik et al., 2014). World Health Organization (2003) reported that physical activities at work reduce sick leave by 32%, health care costs by 20-55% and increase productivity by 52% (Mokaya and Gitari, 2012; 177). Work-life balance has many organizational and individual benefits. These benefits are shown in Figure 1 and Figure 2.

Organizational barrier in maintaining the work-life balance of employees are managerial support, career results, organizational time expectation, genders perceptions, co-worker support, lack of communication and education about work-life balance strategies (Cieri et al.2005; 93, Lazar et al., 2010).

- **Managerial Support**: business managers play an important role in ensuring work-life balance by encouraging and discouraging employees' efforts to balance their work and family life.
- **Career Consequences:** Another factor that prevents the success of work-life balance is the perception of negative career outcomes. The perception that work-life balance practices will negatively affect career expectations by employees appears to be a strong barrier for their use.
- **Organizational Time Expectation:** The existence of "come in early and stay late" success criterion for employees in organizational time planning is accepted as a work-life balance barrier.

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Therefore, businesses that want to increase their work-life balance success need to use new performance measures that focus on goals, results and outputs.

- **Genders Perceptions:** İn order to increase the success of organizational work-life balance, practices that will cause negative affect of the opposite sexes should be avoided.
- **Co-worker Support:** İt is considered that the employees' who use the work-life balance practices perceive their corporate commitment as low and affect the allocation of organizational rewards such as opportunities and salary increases in their career progression. Making the necessary adjustments and balances related to these factors which will negatively affect the success of work-life balance will reduce work-life conflicts.

Figure 1. Organizational Benefits of Work-Life Balance
Source: Beauregard and Henry,2009;10, Lazar et al., 2010;207.

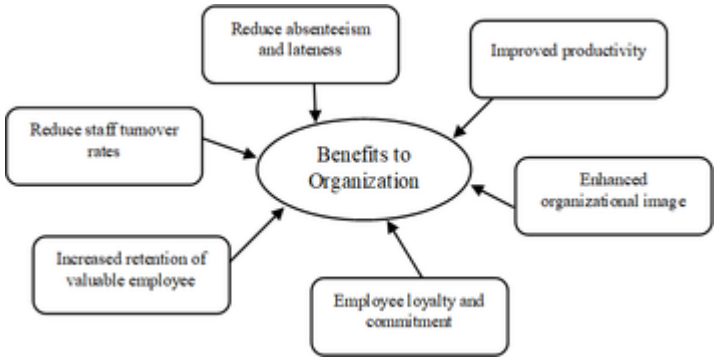
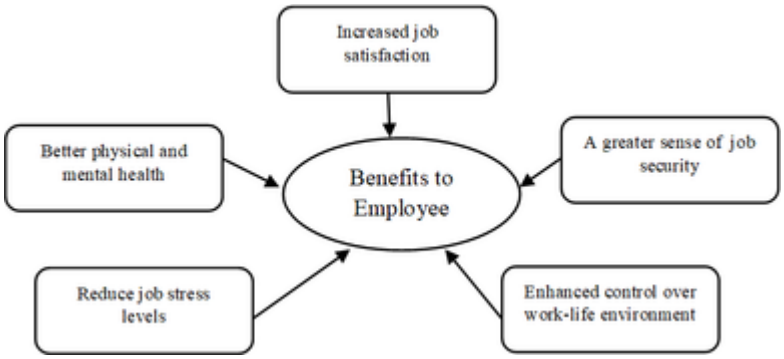


Figure 2. Employee Benefits of Work-Life Balance
Source: Lazar et al., 2010;208.



Work-life balance strategies such as temporal flexibility, interpersonal relationships have the potential to reduce stress on workers with life responsibilities (Cieri et al.,2005). Leisure and leisure activities can be considered as a strategy for coping with problems arising from work and non-work situations (Iwasaki and Mannell, 2000). Business managers benefit from the intangible advantages of recreation programs such as improved staff morale and productivity of leisure activities, retention of staff and

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improved corporate image (Goetzel et al., 2001). The individual's well-being affects the physical and mental conditions in subjective terms as well as external factors such as manager's behavior, working hours and workload. Wellness programs provide important contributions to employees in maintaining work-life balance (Bumhira et al., 2017).

LEISURE

Leisure is defined by Dumazedier (1962) as the freedom to choose enjoyable activities in which the individual is freed from work, family and social time obligations (Veal,2019). Recreation, on the other hand, can be defined as all kinds of activities that individuals do in order to increase their well-being in all time periods (in business life or non-business time) they have reserved for themselves. Recreational activities play an important role in the conscious evaluation of leisure time. Individuals can participate in recreational activity programs to feel good at work and in their non-work lives. Participation in recreational activities primarily activates the hedonic (Tütüncü, 2012) affect of the individual. The fact that individuals carry out recreational activities with their own free will and their free choice and make them into lifestyles contributes significantly to their long-term happiness. The need for recreational activities by Karaküçük (2001) is expressed as, in personal terms; physical health development, mental health, socialization of people, creativity, personal skills and ability to develop, work success and impact on work efficiency, economic mobility, make people happy, socially; social solidarity and integration and creation of a democratic society. Recreational activities may have different characteristics and importance for individuals of any age group or profession. The level of individual readiness, viewpoint to life and the perception of events cause changes in the degree of interpersonal importance of recreational activities. Individuals are expected to acquire certain learning and make positive changes in their lives rather than merely participating in recreational activities. Tekin et al. (2009) found that participation in physical exercise (step, folk dances) in their spare time was effective on students' depression and assertiveness levels, Yiğit et al. (2013) decreased body weight, body mass index, body fat amount, daily energy needs, body age and parameter in women doing aerobic and fitness exercises for recreational purposes, was determined.

Although individuals' leisure time learning is formal and informal (Tütüncü 2012; Kızanlıklı 2014), it is generally informal learning. Recreation learning of individuals, can be explained by social and transformational learning that expressed as "personal and intellectual development and mature to develop their own assumptions, beliefs, feelings and perspectives to learn to question purposefully, and individuals' attitudes, beliefs and assumptions through critical reflection of the world to find new ways to recognize and apply" (Akpınar,2010, p.186). Informal leisure time learning of individuals is also the result of a culture. In the study of Yeniçeri et al. (2002) to determine the leisure time tendency of civil servants in Muğla city center, the leisure time of the civil servants was generally coffeehouse and so on. places, sports fields, and open areas for sightseeing purposes. Türker et al. (2016) found that Safranbolu people generally spend their free time with passive activities by watching TV with family, listening to rest, walking, listening to music, and the participants generally prefer to spend their time with their friends.

Recreational activities have a feature that increases the performance of employees (Lazar et al., 2010). Mokaya and Gitari (2012) found that recreation positively affects employees' well-being by creating positive effects on job satisfaction, service delivery, customer satisfaction and productivity as they increase employee performance and commitment. In addition, it was found that the employees who participated

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in the recreational activities were useful with 0.61 relationship in their work-life balance management. In addition to the impact of participation in recreational activities on employees and operational efficiency, strengthening socialization and value creation in relationships with customers improves the interaction, communication and leadership skills necessary for effective service delivery (Mokaya and Gitari, 2012). In the work of Becker and Tews (2016) for the workplace entertainment activities of tourism employees in the USA, the most frequently participated activities of hotel employees are; food at work, special events and recognition of personal milestones. Unlike; the least frequent activities of hotel employees; personal development opportunities, stress relieving activities and games at work.

WELLNESS

Wellness is a dynamic process of being aware of psychological, physiological, sociological well-being and satisfying life and making the right choices. While the classical health perceptions of individuals evoke concepts such as doctors, operations and medicines, they have evoked concepts such as balanced regular nutrition, ati-aging, beautification and fit with changing health awareness in today's conditions. Individuals deal with many chronic diseases (sugar, heart, blood pressure, obesity, etc.) as well as mental (anxiety, anxiety, stress, etc.) and social (loneliness, social interaction anxiety, etc.). What is remarkable in dealing with these problems is the fact that the incidents seen in certain ages and areas in the past are encountered in all ages and occupational groups. At this point, the adoption of preventive treatment / therapy practices in the early stages and raising awareness of these subjects and supporting them with state policies are also important for healthy individuals and societies in the future.

The concept of wellness began to be used in the United States in 1930 as a combination of the words being well-being "and" fitness " (Rančić et al., 2013), refers to being fit in the mind, body, soul and relationships of the individual. Wellness practices treat the individual as holistic in many ways such as beautification, fit, health, well-being, socialization and relaxation. All kinds of sports activities, massage, skin care, mud-algae-plant baths, balneotherapy, thalassotherapy and healthy living methods such as massage, skin care, thalassotherapy and well-being are included in the scope of wellness. There are many definitions of wellness that deal with the individual with a holistic approach;

- Wellness is a self-directed consciousness that improves the process of achieving full potential.
- Wellness is multidimensional and holistic, covering lifestyle, mental and spiritual well-being and the environment.
- Wellness is positive and supportive (www.nationalwellness.org), andis expressed as.

Wellness & SPA applications date back to Greek civilization. It spread from the Romans to many parts of the world. Mesopotamians, Greeks, Romans and other cultures have experienced the full healing power of regular bathing. This trend has increased in the 21st century in the comfort and rewarding of working individuals. Wellness as a new style of living, a new style of holiday and a new style of nutrition is nowadays. Wellness is no longer just a trend but also a lifestyle philosophy (Ergüven, 2010, 87).

According to 2017 reports, the wellness economy is reported as 4.2 trillion dollars. 4.2 trillion dollars of the economy; $ 1,083 million in beauty and anti-aging, $ 702 million in healthy food, nutrition & weight control, $ 639 million in wellness tourism, $ 595 million in fitness, bodybuilding, $ 575 million in preventive, individual and public health, $ 360 million in complementary and alternative medicine, $

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134 million of wellness lifestyle-specific real estate, $ 118.8 million SPA industry, 56.2 million dollars thermal facility market, constitutes (Wellness Now, n.d)

The total number of wellness visitors in the world reached 830 million people in 2017. The total expenditure of wellness visitors in 2017 is 639.4 million dollars. America (176.5 million people, spending 226 billion dollars), Germany (66.1 million people, spending 65.7 billion dollars), China (70.2 million people), and China (70.2 million people), Spending $ 31.7 billion). Considering the average growth rates of 2015-2017, Slovakia ranks first with a growth rate of 36.9%, Pilipins with 31.1% and Chile with 29.3%. Global Wellness Institute in Turkey according to 2017 data is 19. Values in the wellness tourism market in the first 20 countries in the world (9.1 million people, spending $ 4.4 billion) (Global Wellness Institut, 2018).

Wellness Dimensions

Wellness also refers to a complex situation consisting of overlapping levels of health (Dunn, 1959, p. 786), therefore, the number of models developed regarding the concept of wellness is quite high. The reason for this is that although there is much interest in wellness in the related literature, it cannot be met in a common definition from different perspectives (Roscoe, 2009, p. 216). In the first definitions of wellness, the concept health was stated as the absence of any disease, and psychological and sociological health was also mentioned by redefining health. Egbert (1980) summarized the focus areas of healthy life as an integrated sense of identity, an integrated personality, a perspective for reality and a clear meaning and purpose in life. Travis and Ryan (1988) conceptualized healthy living as individual responsibility and love. Witmer and Sweeney (1992) and then Myers, Sweeney and Witmer (2000) described a holistic concept of well-being consisting of spirituality, self-control, work, friendship and love (Roscoe, 2009, p. 217). Myers et al. (2000) "The Goodness Wheel Model" (Korkut-Owen and Owen, 2012) (WOW, The Wheel of Wellness) is based on Adler's theory of individual psychology and is based on the individual's most important vital tasks, p. work, friendship and love. comprising. Spirituality is stated as the central feature of the Goodness Wheel Model. In addition, 12 tasks were conceptualized that function like fingers in a wheel-column, providing self-direction (essence of emotion, sense of control, realistic beliefs, emotional awareness and management, problem solving and creativity, sense of humor, nutrition, exercise, personal care, stress management), gender, cultural identity). The WOW model has been united in a contextual framework that defines global influential forces (family, society, government, media, business, industry, education, religion) and many interactions in society and the environment that can affect the overall functioning of the individual (Myers et al., 2004).

- **Physical Wellness:** Refers to the physiological well-being of individuals. Hettler (1980) state of physical well-being, flexibility, strength and degree of development and prevention of cardiovascular health, Renger et al. (2000), the individual's level of physical fitness and nutrition as well as avoidance of harmful behavior is defined as (Roscoe, 2009, p. 219). In the physical wellness dimension, the important thing should be prevented before it occurs, not after the disease occurs. In order to maintain and improve the level of physical well-being, it is necessary to eat balanced and regular diet, to exercise regularly, to consume organic food, to avoid harmful habits such as cigarettes, alcohol, to recognize the symptoms of illnesses and to prevent accidents.
- **Psychological Wellness:** Adams et al. (1997) define the state of psychological well-being as having optimistic thoughts about the results of individuals about their experiences and events. In

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order to develop and maintain psychological well-being, it is necessary to keep emotions and thoughts under control, to develop an optimistic attitude, to have time management skills, to know yourself well and to use stress management techniques.

- **Emotional Wellness:** İt includes the ability of an individual to cope with stress, to adapt to change, to maintain sincere friendships (Zorba and Gönülateş, 2016, p. 115), to be aware of their emotions and to maintain and express their feelings in a healthy way. The emotional dimension of wellness includes three different areas, p. awareness, acceptance and management. Emotional awareness, individual's own feelings as well as others' awareness of emotions, emotional acceptance; emotional control of the individual's personal abilities and realistic limitations; it means the control of individual emotions and the ability to cope with them, and how and when they can be supported when necessary (Zorba and Gönülateş, 2016, p. 115).
- **Social Wellness:** Hettler (1980) is defined as the relationship between the individual and others. Social wellness is a movement towards the integration and balance of the interaction between individual society and nature and expresses an effective communication and healthy relationship with other individuals around the individual (Roscoe, 2009, p. 218). Social well-being will be at a high level as long as the individual establishes intimate friendships, joins the community, develops close family ties (Zorba and Gönülateş, 2016, p. 116), develops his talents and skills, and conveys his sincere feelings and thoughts to the other party.
- **Intellectual Wellness:** Hettler (1980) defines the state of intellectual well-being, the extent to which an individual engages his mind with creative and stimulating activities, as well as the use of resources to improve the level of knowledge (Roscoe, 2009, p. 220). This means that you can apply what you have learned, create opportunities to learn more and engage your mind in a very lively interaction with the world around you (Ertüzün, 2016; 567).
- **Economic Wellness:** İt refers to the individual's consumption possibilities and their use on resources. In addition, when individuals consider the well-being of both themselves and future generations, they want to consume some of their current income and save the rest (Osberg and Sharpe, 2002).
- **Occupational Wellness:** İt refers to the individuals' satisfaction with paid and unpaid jobs, their ability to balance their attitude and several roles, how they can use their skills, their ability to contribute to society, and to what extent these values can be expressed (Foster and Keller, 2007).
- **Environmental / Climatic Wellness:** İt has a broad dimension (eg balance, influence, control) that determines the individual's interaction with the environment on a global level. The environment includes home, work, community and nature (Foster and Keller, 2007). The climatic dimension is; individual's climatic (climate change, depletion of resources, increasing world population, disease outbreaks, technological anarchy and geopolitical tensions, economic instability and social turmoil) as a result of changes in the state of well-being (Fritze et al., 2008).
- **Spiritual Wellness*:*** İt is defined as an innate and continuous process of finding meaning and purpose in life while accepting and exceeding the place of the individual in the complex and interrelated universe. Spiritual wellness is a shared connection or community with others, nature, the universe, and a higher power (Foster and Keller, 2007).

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RECREATIONAL ACTIVITIES AND WELLNESS RELATIONS

Wellness plays an important role in evaluating the leisure time of individuals from past to present, preserving and improving their health (physiological, psychological, sociological). The relationship between individuals' participation in recreational activity and wellness perception is reported to be positive (Torkildsen,2006;62). Because the individual's well-being is closely related to his lifestyle. Wellness aims to identify health-enhancing factors and to make changes in the way individuals live in this direction. At this point, participation in recreational activities contributes significantly to the positive changes in the lives of individuals and the promotion of their well-being. Koçyiğit and Yıldız (2014, p.216) state that the benefits of recreational activities to individuals and society; to allow the individual to express himself, to increase creativity, to provide new experiences to people, to establish friendship relationship and to expand the social environment, to create happy and healthy individuals, to increase productivity, to contribute to the development and regulation of mental health of individuals, contribute to the improvement of life level. Individuals especially have the opportunity to participate in outdoor recreation activities, to eat healthy foods, to do their daily physical activities, to get rid of the stresses caused by their daily lives, to clean and improve their bodies. Outdoor recreation program participation helps individuals to be free from alcohol, drugs, tobacco and even processed foods (detoxification) (Carpenter and Harper, 2016). Employee wellness programs help employees to overcome and deal with stress from drug / alcohol addiction, financial/debt problems, medical and chronic illnesses, career crises and job demands (Tuwai et al., 2015). In addition, in the organizational sense, wellness programs play a role in enhancing employee morale, commitment and productivity. Through participation in wellness programs in the workplace, employees aim to feel better and have more energy. In addition, these programs raise the awareness of employees about their health and strengthen their responsibility to take responsibility (Rančić et.al., 2013). Business managers should organize corporate, environmental, financial, intellectual, physical wellness programs and support the participation of employees to increase employee well-being (Tuwai et al.,2015).

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Chapter 62
Foreign Education, Underemployment, and Wellness: Lived Experiences of African Immigrants in the USA

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ABSTRACT

Although the number of African immigrants in the United States has steadily increased, there remains a gap in understanding their lived experiences in the context of employment and wellness. Using qualitative method, this study investigated underemployment and wellness among six foreign-educated African immigrants. The purpose of this chapter is to discuss three themes that emerged from this study. Study design utilized was grounded theory. Participants in this study held professional jobs before relocating to the US. Results suggest that despite excitement of migrating to the US, African immigrants experience myriad life events from the time they land until when they settle down. Yet, the adaptation mechanisms reported include social networking and social support. Thus, three themes that emerged from this study are occupational, emotional, and social wellness. From the findings, the authors developed underemployment versus wellness conceptual framework that can be used for future studies.

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INTRODUCTION

Recent studies (PEW Research Center, 2020) show that more than 13.6% (40 million) people living in the United States were born in another country. Evidence shows that the immigrant population in the United States is very diverse with every country represented. Notwithstanding, 27% of the immigrants are permanent residents. However, despite this representation, the same is not reflected in employment. A recent study exploring employment in the USA found that majority of African immigrants are underemployed (Tesfai, 2017). On account of this, underemployment is a situation in which individuals get employed in workplaces they are overqualified (Caicedo, van Gameren, & Amuedo-Dorantes, 2018). Thus, it is when individuals whose academic qualifications, experience, skills, and knowledge exceed what they need for the jobs they are doing.

Authors for this study identified a gap in understanding African immigrants' lived experiences in the context of underemployment. More specifically, the study sought to understand African Immigrant feelings about employment opportunities and effects on their life. Therefore, the objective of this chapter is to present research findings from a qualitative study done with African immigrants exploring their lived experiences in the context of underemployment and wellness.

BACKGROUND

Underemployment

Batalova, Fix, and Bachmeier (2016) define underemployment as workplaces that highly skilled persons work in low-skilled jobs requiring moderate or less on-the-job training. Low skilled jobs typically require a high school diploma or less, for example, personal-care aides, housekeepers, and truck drivers. Research findings show that 40% of African immigrants and 36% of the US born white population aged 25-40 have at least a bachelor's degree (Tesfai, 2017). But with regard to employment, African immigrants are disproportionality underemployed and continue to be part of the population segment that is significantly underemployed (Hailu, Mendoza, Lahman, & Richard, 2012). Whereas US experienced significant decrease in underemployment between 2010 and 2019, there still exists disparity based on race and country of birth (Batalova et al., 2016; Nunn, Parsons, & Shambaugh, 2019). In a recent annual report, America's Health Rankings (2019) revealed 11.6% and 6.1% underemployment rate among black adults and white adults, consequently. It has also been suggested that African Immigrants experience more occupational segregation than other races (Tesfai, & Thomas, 2020).

Despite the fact that academic credentials are supposed to help secure employment opportunities, this has not always been the case with African immigrants. Highly skilled immigrants often find it hard to transfer their knowledge from home country to the United States (Batalova et al., 2016). A qualitative study with immigrants describes frustration felt by African immigrants when their foreign education and work experience fail to help them secure descent jobs (Baran, Valcea, Porter, & Gallagher, 2018). Evidence shows that of the total number of unemployed people in the USA, foreign born and educated immigrants account for 60% (Batalova et al., 2016). Consequently, immigrants experience perceived broken promises and pleasant surprises.

Studies show that there many factors that account for this unemployment. It is appalling that immigrants are discriminated based on accent, rather than looking at the skills and qualifications required

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for the advertised positions (Hosoda, 2016). Also, it is unfortunate that language fluency and cultural knowledge indirectly limit immigrants' acquisition of jobs (Guerrero & Rothstein, 2012). Accordingly, employers tend to connect and hire individuals that exhibit language and cultural competency.

In their study, Lane and Lee (2018) provide four lived experiences of immigrant workers: loss of community; lack of voice; frustration with U.S. educational and regulatory systems; and pride in their vocation. Immigrants are frustrated when educational credentials seem not to help them navigate the US system to secure good jobs. Loss of community also points to frustrations of working in an unfamiliar territory surrounded by strangers. Immigrants lack the social support to lean on. Immigrants feel they are on island with individuals or neighbors who seem not to understand their plight. Lack of voice is felt because accent or language barrier make it hard to express concerns and frustrations (Hosoda, 2016). As much as majority of immigrants from Anglophone countries are fluent in written and spoken English, there is the issue of assent. In addition, immigrants suffer from imperfect transferability and queuing approach (Tesfai, 2019). That is, employers discount immigrants' educational qualifications and work experience; and rank applicants on racial 'hierarchy' rather than academic qualifications.

Economic Burden

Underemployment rate has often been used as one of the indicators of economic health of a nation, state, and individual families (US Bureau of Labor Statistics, 2019). Evidence shows that there is economic burden of unemployment both to individuals and governments (Pettinger, 2019). Economic effect on individuals include loss of income and lower on job-training. Underemployment has been linked to low income as workers on full time jobs do not receive wages that are enough to significantly raise their income above poverty line (Thomas, Horton, & Henderson, 2019). Evidence shows that 71% of immigrant workers are engaged in service industry which is often dirty, demanding, and demeaning, and professional work (Moyce & Schenker, 2018; Quandt et al., 2013). Recent study found 25% foreign born graduates in the USA is either unemployed or underemployed (Batalova et al., 2016). Basically, skilled workers forego $39.4 billion earnings between 2009 and 2013. Another scientist reported that underemployment rate among African Immigrants has huge economic burden (Wiltz, 2015). At personal levels, a study with African Immigrants revealed association between underemployment and material deprivation, limited participation in social events, limited access to social rights, and insufficient cultural and community integration (Saasa, 2019).

Albeit African immigrants being generally more educated than US-born workers, they earn lower wages (Waters, Kasinitz, & Asad, 2014). Lower wages are associated with low socioeconomic status for the families. Interestingly, there is association between time of stay in U.S., employment opportunity, and earnings (Frankenberg, Gansey, & Thomas, 2015). Immigrants that cope and stay longer tend to find upward paths, better jobs, and increase in income. On the other hand, immigrants that are frustrated and dissatisfied with their current jobs or are underemployed decide to be self-employed (Frankenberg et al., 2015).

Economic burden on underemployment to governments include loss of tax and higher benefit spending (Pettinger, 2019). In addition. Studies have shown that underemployment has led to economic slack in the US (Bell & Blanchflower, 2018). Underemployed persons make less money which indirectly stagnates or slows down economic growth at county, state, and federal level.

Finally, scientists point to relationship between economic and social health (Akhmat, Zaman, Shukui, Javed, & Khan, 2014). Even though Akhmat et al. (2014) revealed direct relationship between education,

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economic empowerment, and social health, there seems to be disconnect with immigrant population (Waters et al., 2014).

Social Health, Social Networks, and Social Support

World Health Organization (WHO, 2020) defines Health as "a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity." Being one of the categories of personal health, social health entails establishment of strong and healthy relationships with others. With the massive economic and social health challenges faced by immigrants, the role of social networking and social support cannot be overlooked. While social networking and support enhance social health (Heaney & Istrael, 2008; Shinyshiny, 2020), their absence has profound negative effect on individuals, families, and community.

Undoubtedly, immigrants lean on family members and community for social support (Premji, & Shakya, 2017). In addition, researchers (Heaney & Israel, 2008), suggest the use of social networks as linkages among people to provide social support and social capital. Primarily, social networking becomes handy as a tool that can be attained by the local community by reaching out to immigrants and vice versa (Kyeremeh, Arku, Mkandawire, Cleave, & Yusuf, 2019). Albeit refugee organizations liaising with local organizations to provide social support to immigrants (Bran et al., 2008), non-refugee immigrants rarely benefit from such services. An approach that is accessible and often used by immigrants is establishing social networks and joining religious organizations such as churches (Saasa, 2019).

CONCEPTUAL FRAMEWORK

A recent review of interventional studies in social health suggest that one approach to understanding connection between economic issues and social health is conceptual model for the relationship of social networks and social support to health (Heaney& Israel, 2008). Social networks are either dyadic, that is specific relationship between individual and others, or whole. Whole networks is characterized by members with similar demographics, living in close geographic dispersion, and knowledge and interaction with each other.

According to Heaney and Israel (2008), the functions of social networking are social capital, social influence, social undermining, companionship, and social support. Hence, social support is the functional content of relationships that is categorized into emotional, instrumental, informational, and appraisal. Studies show that studying social networking helps to understand how change in social networking affects social capital and social health (Burke, Marlow, & Lento, 2010). It has also been shown that social networking and social support positively impact community and organizational competence, and ability to utilize human resources in solving community problems.

From the literature, there seems to be a gap in understanding the lived experiences, economic burden, and social health of underemployed foreign educated African Immigrants. Using qualitative research design, this study investigated lived experiences of African Immigrants in the United States. Specifically, authors sought to understand immigrants' experiences in the US.

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METHODS

Research Questions

a. What is the perception of Immigrants before and after arrival in the USA?
b. What is the feeling of foreign educated immigrants about working in the US?
c. How does underemployment affect individuals and families?
d. What is the perception of social health?

Design

For this chapter, authors used grounded theory design. Grounded theory is a qualitative research design that allows theories to emerge from the data collected (Astalin, 2013). Specifically, grounded theory design follows a flexible systematic method that entails data collection, coding, drawing connections, and determination of emerging theories.

Data Collection

Participants were recruited from African immigrants in the US. The process entailed recruiting participants and then asking interviewed participants to recruit or refer new potential participants. Participants were contacted using online platforms (email, what app, messaging, and phone calls). Interviews were conducted via telephone and what app video calls. Participation was voluntary and there was no compensation for participating in the study.

Participants

After IRB approval, participants (Table 1) were contacted. Eligibility criteria is: adults (+18); permanent residents and U.S. citizens; Immigrants from Africa; foreign college education; and Professional work experience prior to migration. Participants' level of education varied from two years of college after high school to Master's degree before they moved to US.

Table 1. Participants' Demographics

Participant	Gender	Career before Migration	Current Level of Education	Career Today
X	Male	K-12	PhD	Higher Ed
C	Male	Engineering	BSC	Engineering
T	Male	Craftsmanship	Assoc. Degree	Self-Employed
G	Male	IT	PhD	Higher Ed
Q	Female	K-12	PhD	Higher Ed
w	Male	K-12	Masters	K-12

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Measurement Instruments

Data were collected using telephone interviews. Interview questions were 5 questions with pros. Sample questions are: "What are your experiences with job search and placement in the US? Did anything surprise you? If so, what in particular did you find surprising? What resources helped you the most and why were they helpful?"

Data Analysis

Data analysis utilized grounded theory, an approach in which data are collected and simultaneously analyzed to reach a point of saturation to construct a theory (Charmaz, 2014). All telephone interviews were recorded and transcribed verbatim. Steps followed in the analysis process were: Coding the data; identification and making connections; interpretation of patterns; assessment of emerging themes; and development of a new theory. Coding conceptualized and analyzed, and identified patterns in the data. Coded data were then inserted into the table.

Results

The purpose of this study was to investigate underemployment and social health among African immigrants. In response to research question 1, overall outcome is that majority of immigrants encounter disconnect between their perception of US before and after arrival. All the participants had an assumption that life in US is easy and well-paying jobs are readily available. However, from these findings there is feeling of regret, home sick, hopelessness, and home sick.

Responses to research question 2 revealed that majority of immigrants initially find it hard to secure jobs that are equivalent to their academic qualifications. Due to economic demands, immigrants end up picking up jobs well below their educational level (also called underemployment). For instance, a participant with K-12 teaching qualifications started working as a cashier in a local retail store.

Responses to research question 3 point to occupational, emotional, and social impact of underemployment. Underemployment makes it hard to meet economic obligations such as paying bills. Findings revealed a link between occupational, emotional, and social health

Participants' responses to question 4 indicate two aspects of social health, that is, social support and networking. Results show meaningful relationships and bonds between individuals and family members, friends, and community. Bonding helped immigrants adapt to difficult social situations in addition to a sense of belonging. Networking became more useful after individuals settled down and began to know their neighbors, community members, and religious organizations. Immigrants extended their social contacts by making connections through individuals and other platforms such as Facebook.

Using grounded theory, three themes emerged from this study. Data organization was based on three themes (Table 2) that address research questions:

a. Occupational Health
b. Psychological Health
c. Social Health

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Table 2. Themes and Sub-Themes

Theme	Sub Themes
Occupational Health	· Underemployment · Job search · Barriers
Emotional Health	· Stress · Life events
Social Health	· Social Networking · Social support

Occupational Health

According to WHO (2020), occupational health is improvement of working conditions and other aspects of environmental hygiene. Other scientists regard occupational health as a sense of satisfaction with choice of work (Roddick, 2016). Specifically, occupational health includes policy instruments, protection and promotion of worksite health, and access to health services. In this study, all the participants had professional training and work experience prior to migrating to the US. Sub-themes under occupational health that emerged are underemployment, job search, and barriers.

Upon resettlement in US, first jobs were not in the field of training, but rather low paying jobs that enabled immigrants to earn little money to pay bills and provide for basic needs. Participant Q said: "… so I had to lower my standards and apply for a cashier job in a local store because I really needed to put food on the table and pay the bills". This approach was common among all the participants. Some participants said they took a very long time before getting a job. For instance T said, "I came in the middle of recession. It took me four months before I got a job with Walmart. It was hard since my family also depended on me". Another issue raised was learning new job and adjusting to the shift. Four participants expressed the challenges of learning new skills, adjusting to new environment, and same time having either long shift or night shift.

Participants also discussed barriers they encountered in job search. Issues discussed included overqualification, distance to work places, foreign education, and certification, and discrimination. It was frustrating when immigrants could not be hired for jobs they qualified, and yet they were still turned off from minimal wage jobs for being too qualified. It was particularly interesting when one participant said as follows:

I didn't even use my experience to apply for the job so I just used my high school diploma to apply for jobs because I was told if I use my degree then I'll be overqualified for the job and I won't get the jobs. (Q).

Three participants explained how lack of personal cars made it hard to apply for jobs that were far away. Immigrants had to seek for jobs with employers along the bus line. This in itself made it hard to get jobs.

Four of the participants discussed the process of evaluation and recognition of their international education qualifications. Majority of them went through World Educational Services (WES). WES is an agency that evaluates and equates foreign academic credentials to US credentials. Having documents equated helped in job search. For instance three participants said through WES, they were able to get

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teaching jobs. Participant C said, "…beginning was tough. But I was lucky to get a teaching job. After a long process, my foreign academic credentials were accepted by the local school board. I also think I was hired because of teaching STEM field."

All the six participants said they were surprised and frustrated to find that they needed US certification to be considered for the certain jobs. To navigate job search, all the participants said they had to enroll in US colleges either for degrees or certification credits. Participant C said this: "I have the knowledge, I have the skills, and experience, but I was told to get engineering job I needed certification. Employers refused to recognize my degree." It was surprising to learn that most professional jobs in US required certification.

Three participants said among the barriers they encountered was discrimination based on race or country of origin. One participant said despite having acquired a PhD in the US, it never helped him to get a job in his field of specialization. This could be attributed to race or country of origin. A female participant Q said:

I remember going to look for a job in one place and the line was so long and I just wanted a job. Among the requirements was applicant's photo. I mean, when you fill the paperwork and they ask for picture and that was already a red flag for a teaching job. We never go that job.

Emotional Health

Participants discussed stress and life events the major emotional issues they are facing. All the six participants mentioned experiencing stressful life especially during their early stay in the US. Three major causes of stress mentioned are non-employment and unemployment, 'Home sick', and life events. When probed about what stressed him most, participant C had this to say: "For my knowledge it is underpayment… some jobs are not paying well… You go up and expectations are not met". Likewise participant C said, "Life was not easy… I thought I would get jobs the following day. I stayed home for three months before getting jobs". Primarily, the above two participants describe how frustrating and stressful it was to be jobless or underemployed.

Four participants expressed how they were stressed doing odd jobs with minimal wage. One participant summarizes the conditions and feeling as follows:

I worked day and night. Moving from place to place. Only slept for 2 hours per night for four years. I had two days off per week. I felt bad… wanted to go back home but had family to support. (Participant C).

In addition, all participants expressed missing their previous lifestyle and felt homesick. Hence, on various occasions each participant thought of going back to their countries of origin. Participant X bluntly said "Felt lonely… thought of going back to Kenya". Feeling of homesickness seem to be associated with the circumstances in which African immigrants find themselves.

Life events was another sub-theme that came out from the interviews. Life events included feeling of economic insecurity, demeaned, and uncertainty due to lack of health insurance. Participant G said, "money is not enough… might not meet the needs. Having a spouse was challenging especially when you cannot help meet family needs". Another participant expressed life event related to health insurance. He said, "I became sick. I did not have health insurance. Going to emergency unit I had to wait for three hours". A female participant Q felt the life she was leading demeaned her status. She summaries

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as follows: "my life… my parents…I did not want my relatives in Africa to ask me what I'm doing. I would never tell them what I was doing because I felt like this was not something that is expected of me".

Social Health

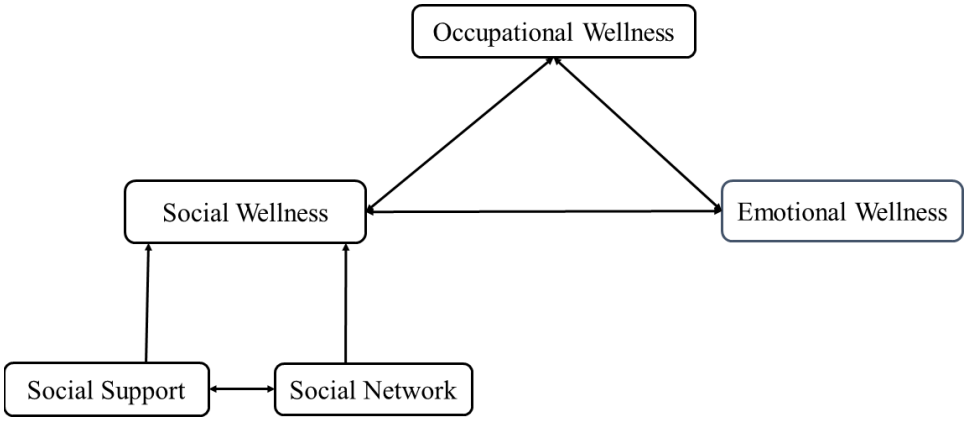
Social health had two sub-themes, namely: social networking and social support. Five participants talked about how they used social networking techniques to connect to jobs. When asked about source of support, participant C said, "My support came from my spouse… Had connections…church connections". That is, family member and church helped cope with challenges as well in job search. Four participants discussed internships and graduate assistantships to earn them permanent positions later. After getting USA certification, participant T interned with a local company. Here is what he said: "I was hired with a local company. I was a good employee. My supervisor recommended me to bigger company that suited my skills".

Second sub-theme is social support. During the stressful moments, immigrants seek for social support from church, friends, and family. Six participants expressed getting social support from church. Participant X, a university professor said: "I was connected to a Kenyan family on Sunday and took me to church…sponsored track phone and church members used to pay for my bundles". Five participants said they got social support from family by talking and encouraging each other. Social support also helped participants cope with stressful life. From this conversation, family members were stressed due to life events and talking to each other accorded the social support they needed.

DISCUSSION AND RECOMMENDATIONS

Overall, three themes that emerged from this study have implications for future interventional mechanisms. To that end, the authors developed 'Underemployment verses Wellness Conceptual Framework. (Figure 1).

Figure 1. Underemployment and wellness conceptual framework



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This conceptual framework explores the relationship between occupational, emotional, and social health in the context of underemployment. Findings also showed that authors' model is different from 'Conceptual Model for the Relationship of Social Networks and Social Support to Health' (Heaney & Israel, 2008). This chapter revealed overlap between determinants of occupational, social, and emotional health. In addition, the three dimensions of health had both positive and negative impact on Immigrants. For example, occupational health is negatively impacted with underemployment, unemployment, and low wages.

In support of other studies, foreign-born persons have a slightly higher rate of underemployment than US-born white labor force (Wang & Lysenko, 2014). From emotional health perspective, immigrants are stressed by uncertainty and life events. On the flipside, social support and social network provide avenues to meet emotional needs. Similar to other findings, church members connecting with immigrants help address some of their concerns (Saasa, 2019). An example given in this study is a participant who talked of how church members helped with phone bills.

Immigrant social health was curtailed by language barrier and accent. Also, being far away from family members causes anxiety and stress. Findings from this study suggest existence of symbiotic relationship between social networking and social support. For example, social networking such as connecting with employers through friends and social media platforms can open doors for employment opportunities. There is evidence that African immigrants have either been underemployed or are currently underemployed (Batalova & Bachmeier, 2016). It is also apparent that underemployment impacts occupational, emotional, and social health. In nutshell, many immigrants find themselves facing stressful life when they move to US.

Upon migration, immigrants' experience disconnect between their expectations and reality. In other words, many immigrants migrate expecting many job opportunities and easy life. However, transitions proved stressful to all of the participants in this study. It takes a while to settle down, get a good jobs, and adapt to new culture and way of life. Results suggest that new environment takes toll on immigrants' occupational, social, and emotional health. In nutshell, results from this study support previous findings suggesting association between emotional health and social health (Umberson, Crosnoe, & Reczek, 2010).

Findings from this study show how social networking and social support can be useful in addressing occupational, emotional, and social health. Also, results support previous studies that identified connection between social networking and occupational health (Burke, Marlow, & Lento, 2010). Through social networking, community members get good and well-paying jobs that positively impact quality of life. Discoveries suggest that there are solutions to immigrant occupational health.

First, it is recommended that immigrants conduct some kind of research to understand the states they plan to move. For instance, they should find out job opportunities, social health of the people, government and private support of immigrants, and community response to immigrants. Immigrants could seek for evaluation and accreditation of their academic credentials. If necessary, it is recommended those individuals with desired qualifications seek for certification. As discussed earlier, earning a US certifications is an added advantage in job search. It cushions immigrants from discrimination or denial of jobs based on foreign education.

Also, it is recommended that immigrants take advantage of educational opportunities and financial aid to enroll in US colleges to further their education. As reported in this study, US college education increases probability for better employment opportunities. Nevertheless, precaution should be taken to ensure individuals enroll in courses that have high probability of employment. That is, immigrants could use online resources to identify careers that have high employment prospects.

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Moreover, it is worth the trial for immigrants to seek for internship opportunities or graduate assistantships depending. Internship and graduate assistantship helps gain skills by learning on the job in addition to social networking and social support. In addition, this chapter advocates for provision of affordable wellness services to the immigrants by governments and private sector. This chapter findings collaborate other studies showing how immigrants suffer from enormous stress (Saechao et al., 2012) that sometimes result into mental health deterioration. Addressing this potential health issue ensures that the society is healthy and hence more productive.

The interrelationship between social network and social support was evident in this study. It seems important for immigrants to get out of their homes and connect with the community. Social networking can be done through personal referrals, social media, and attending community events.

The fact that immigrants take long to be hired in well-paying jobs shows the challenges of establishing or continuing with a career in a new country. Therefore, identifying measures that establish social networking and social support may help address occupational health issues affecting immigrants.

Lastly, testing the Underdevelopment verses Wellness Conceptual Framework on larger scale might help understand the immigrant lived experiences in the context of underemployment. Additionally, this framework could be tested in both qualitative and quantitative studies.

LIMITATIONS

Discuss future and emerging trends. Provide insight about the future of the book's theme from the perspective of the chapter focus. Viability of a paradigm, model, implementation issues of proposed programs, etc., may be included in this section. If appropriate, suggest future research opportunities within the domain of the topic. While this research explored underemployment among Immigrants, several limitations should be considered. First, being a qualitative study, the number of was smaller which limited demographic variation. Designing a study with more participants might increase diversity of ideas and experiences. Hence, more themes or sub-themes might emerge. In addition, majority of the participants being males, it is difficult to tell if equal gender representation might have provided more information. This is so because lived experiences of males and females are not necessarily the same (Hailu, Mendoza, Lahman, & Richard, 2012).

Second limitation emerged from telephone interviews, even though it was the preferred mode by all the participants. Use of telephone interviews cuts off face-to-face connection that is important for capturing non-verbal cues. Thirdly, qualitative study design limits the ability to infer the results. Study findings may only be inferred to populations with similar characteristics. Using quantitative approach with larger sample might shed more light to this topic.

CONCLUSION

This study investigated immigrants' lived experiences in the context of underemployment and social health. Six participants took part in this study. We employed grounded theory research design. From the study, three major themes emerged: occupational, emotional, and social health. Under occupational health participants discussed underemployment, unemployment, and economic burdens to their families. Emotionally, participants explained how underemployment and low wages contributed to stress,

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and negatively impacted life events. An example of life event was sickness and lack of medical checkup because they did not have health insurance. Also, some participants felt bad that they could not afford to enroll their kids in sports clubs.

Social health had two sub-themes, social networking and social support. Being in a foreign country made it hard for immigrants to establish connections with the local community. From the study, it is evident that immigrants establish connections beyond immediate family members and friends. Religious organizations, especially churches, are handy in linking immigrants to the community. In line with previous findings, it is recommended that policy makers incorporate health education and promotion measures to address all determinants of health (Agyekum & Newbold, 2016).

Finally, this study developed underemployment verses wellness conceptual framework that can be used to explore the relationship between occupational, emotional, and social health. Even though this study was done in the context of underemployment, this framework can be tested in other settings and populations with characteristics that are different from out study population. Overall, this research contributes to understanding of occupational, psychological, and social health of immigrants in the context of underemployment.

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KEY TERMS AND DEFINITIONS

Barriers: Conditions that make it difficult for people to get employment.

Emotional Health: Personal conditions that enable a person be in control of individual thoughts, feelings, and behaviors.

Job Search: The act of searching for job due to unemployment, underemployment or discontented with a current position.

Life Events: Experiences that interrupt an individual's usual activities and cause considerable alteration and modifications.

Occupational Health: Promotion and maintenance of overall wellbeing of workers and improvement of working environment.

Social Health: Ability to form meaningful relationships with others and to have positive interactions.

Social Networking: Practice of expanding social contacts by creating connections through individuals and/or social media.

Social Support: Having people around you that turn in in times of need and crisis to provide buffer.

Stress: Physical, mental, and emotional factors that cause physical or mental tension.

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Chapter 63
Workplace Incivility and Job Satisfaction:
Mediating Role of Emotion Management

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ABSTRACT

Workplace incivility is common in organizations across the world and can have negative effects on individuals and organizations. The purpose of the reported study is to examine the effects of supervisor and coworker incivility on job satisfaction and examines emotion management as a mediator of these relationships. Data from 268 working adults were collected by survey battery and analyzed via a number of multivariate techniques. The model was supported in that both supervisor and coworker incivility had strong direct negative effects on emotion management and job satisfaction, and emotion management partially mediated the incivility-job satisfaction relationship. With supervisor and coworker incivility, the participants reported lower levels of job satisfaction. However, the participants' emotion management mitigated the negative effect of incivility on job satisfaction partially. The findings suggest that organizations need to be aware of the unfavorable consequences of incivility. Organizations need to discover ways to reduce incivility and implement efforts to help employees develop positive emotional management strategies. These actions may help reduce the negative influences of incivility on important organizational outcomes like job satisfaction.

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1. INTRODUCTION

Emotion management is a process used to modify one's emotional expressions, experiences, and physiology and the circumstances eliciting the emotions to produce appropriate responses to environmental and organizational demands (Aldao, 2013; Hochschild, 1990). The use of emotion management is especially true in the service industry, where there are rules for emotional expression (Diefendorff, Richard, & Croyle, 2006) and the workplace will govern when and how specific emotions should be expressed. The process of emotion management typically involves two practices: behaviors suppressing any negative emotions one is feeling and faking positive emotions that one is not truly feeling (Glomb & Tews, 2004; Sliter, Jex, Wolford, & McInnerney, 2010).

One reason an employee may have the need to engage in behaviors where faking positive emotions is required is when dealing with rudeness and incivility, a growing problem that can have notable consequences at the individual, group and organization level (Porath, 2018). Researchers (e.g., Pearson Andersson, & Porath, 2000; Sears & Humiston, 2015) have found that nearly half of workers report having been treated rudely at work weekly, while Reio and Ghosh (2009) discovered that 54% of respondents in their study admitted to instigating uncivil behaviors, such as saying something hurtful towards someone in the workplace, once a year or more. Workplace incivility is defined as low-intensity deviant behavior that departs from norms of mutual respect, with ambiguous intentions to harm (Andersson & Pearson, 1999). Workplace incivility can come from a number of sources, ranging from supervisors and coworkers (Reio & Sanders-Reio, 2011) to customers and vendors (Hochschild, 1990). Importantly, it has been shown to have negative influences on those who either witness, directly experience, or instigate it (Cortina, Magley, Williams, & Langhout, 2001; Reio & Ghosh, 2009). As posited by Andersson and Pearson's Tit-for-Tat Theory of Incivility, isolated instances of uncivil behavior can lead to responses-in-kind to instigators. For example, Rosen, Koopman, Gabriel, & Johnson, (2016), using an experience-sampling design, found experiencing incivility earlier in the day was linked to decreased self-control (ego depletion), which in in turn was linked to instigated behavior later in the day. Overall, these responses-in-kind from targets to instigators can lead to the escalation of more intentional, harmful patterns of behavior like bullying, and eventually physical violence, as predicted by incivility theory (Andersson & Porath, 1999; Cortina et al., 2001).

Incivility has been associated with many negative occupational, psychological, and organizational outcomes, as well as issues with physical health (Lim & Cortina, 2005; Sears & Humiston, 2015). Regulating emotion is associated with stress, emotional exhaustion and negative physical symptoms (Schaubroeck & Jones, 2000) that can dampen job satisfaction (Welbourne Gangadharan, & Esparza, 2016).

This paper contributes to the research literature in two ways. First, while prior research indicates that being the target of supervisory and coworker incivility is negatively associated with a number of organizational outcomes (Porath, 2018; Rosen et al., 2016), little research has examined the effects of both supervisory and coworker incivility in one study on job satisfaction. This research employs a structural modeling equation approach to examining these links and provides evidence that each type of experienced incivility has a negative effect on job satisfaction. Second, this study sheds light on the mechanism through which incivility influences job satisfaction. Prior research suggests that experiencing incivility can elicit negative emotional reactions (e.g., Porath & Pearson, 2012), and these emotional reactions can dampen job satisfaction (e.g., Penney & Spector, 2005). To our knowledge, no research has examined whether employing strategies to manage one's emotions (i.e., emotion management) mediates the effect of both supervisor and coworker incivility on job satisfaction. Therefore, the purpose of this study was

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to examine the effects of supervisor and coworker incivility on job satisfaction and investigate emotion management as a mediator of these relationships.

2. REVIEW OF THE BACKGROUND LITERATURE

Pertinent to the reported study is an understanding of workplace incivility, job satisfaction and emotion management, each of which is now briefly discussed.

2.1. Workplace Incivility

Workplace incivility is on the rise and creates toxic work environments with negative consequences in workplace settings across the world (Montgomery et al., 2004; Pearson & Porath, 2005; Porath, 2018). For example, in a Swedish study utilizing a stratified sample that mirrored the Swedish work population, Torkelson et al. (2016) found that 52% had been the target of supervisor incivility and 73% some form of coworker incivility in the past year. Similarly, with a group of U.S. healthcare workers, Reio and Trudel (2013) found that 75% had experienced incivility over the past year and that roughly 30% had experienced such behavior sometimes to always. Notably, as the multiple regression analyses revealed, being the target of uncivil behavior was strongly linked to poorer organizational commitment and contextual (interpersonal) performance and greater turnover intent. Moreover, in a large study conducted in six Asian countries (China, Hong Kong, India, Japan, South Korea, Singapore), Yeung and Griffin (2008) discovered that worker engagement suffered decidedly as a result of experiencing incivility, particularly if experienced once a month or more. In China, for instance, among those who experienced high incivility, their engagement was but 30% versus 73% for those who experienced none; in Japan and Hong Kong, when being exposed to high levels of incivility, engagement dropped to 13% and 12%, versus 24% and 29% for those experiencing no incivility, respectively. Demonstrating further that incivility can be a concern in a wide range of cultural contexts, Sharma and Singh (2016) found that incivility was negatively related to job satisfaction and positively to turnover intent among Indian restaurant employees. Further, Nitzsche, Ribeiro, and Laneiro (2018) found that supervisor incivility was far more prevalent among Portuguese hotel employees than coworker incivility, but each powerfully predicted emotional exhaustion and cynicism.

Frequent incivility from supervisors, coworkers and customers can lead to greater employee anxiety, depression, nervousness, and sadness (Hochschild, 1990), which can lead to lower job satisfaction, higher psychological distress, and higher rates of turnover (Andersson & Pearson, 1999; Zia-ud-Din, Arif, & Shabbir, 2017). Thus, incivility can be initiated from both inside (e.g., supervisor, coworker) and outside the organization (e.g., customer, vendor). For the purposes of this research, we focused on supervisors and coworkers because these tend to be the major sources of uncivil behaviors in most organizational settings (Nitzsche et al., 2017; Rosen et al., 2016).

Coworker incivility is uncivil behavior instigated by coworkers, such as giving you a dirty look, making mean comments about you, and excluding you from professional camaraderie. Most if not all of the same uncivil behaviors associated with coworkers can be instigated by supervisors. Being the target of supervisor incivility in particular has been linked to increased worker perceptions of loss, iniquitousness and bias (Rosen et al., 2016). Thus, supervisor incivility is troubling because of the supervisor's power to not only influence the day-to-day work lives of supervisees, but also the supervisee's careers

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(Nitzsche et al., 2017; Yeung & Griffin, 2008). This troubling state-of-affairs is true also for coworker incivility, but to a lesser extent because a coworker's power tends to be less than a supervisor's in most cases. This power issue can be further exacerbated negatively by gender and race (Cortina, Kabat-Farr, Magley, & Nelson, 2017; Montgomery et al., 2004). To be sure, when a supervisee perceives bias or injustice, the likelihood of uncivil behavior towards supervisors, coworkers and clients can increase (Lawrence & Robinson, 2007).

2.2. Job Satisfaction and Workplace Incivility

Job satisfaction is defined as an employee's positive emotional state resulting from the appraisal of his or her job or job experiences (Locke, 1976). Job satisfaction can be dampened by workplace incivility (Schilpzand et al., 2016; Sharma & Singh, 2016). Welbourne et al. (2016) found that targets of incivility experienced lower job satisfaction and sense of community. However, those who used emotion-focused coping strategies (avoid the stressor, praying) at work versus problem-focused coping (taking action and making a plan) to respond to work stressors (incivility) experienced fewer negative outcomes. Seeking emotional support to handle being the focus of uncivil behavior was unequivocally not beneficial for women, however, but using a religious coping style was. The authors noted that it might be that emotional-support seeking elicits negative responses (e.g., accusation, condemnation).

Laschinger, Wong, Cummings, and Grau (2014) found a negative relationship between coworker incivility and job satisfaction among a group of Canadian nurses. In addition, Reio and Ghosh (2009) researched instigator job satisfaction and perceived physical health and their association with incivility, positive and negative affect, socialization-related learning and development and organizational productivity. The authors found that establishing relationships with coworkers and supervisors and having positive affect positively predicted job satisfaction, whereas negative affect and incivility was associated with lower job satisfaction. Therefore, as predicted by incivility theory and the extant empirical research, we expect that:

H1: There is a negative relationship between supervisor and coworker incivility and job satisfaction.

2.3. Emotion Management

There are several terms, often used interchangeably, that refer to emotional processes. Emotion work, also referred to as emotion management or emotional labor, was defined by Hochschild (1983) as the effort to control or change emotions in oneself or in others in order to meet social guidelines. Hochschild (1990) first defined emotion work as two processes - evocation or suppression. This occurs when organizations require people to show a particular emotion or if people feel compelled to manage their emotions and to either induce or suppress feeling to display the appropriate emotional expression. Hochschild (1983) first identified potential negative outcomes from managing emotions at work, including increased stress, burnout, absenteeism, headaches, and decreased job satisfaction. High levels of stress as well as emotional exhaustion can have negative consequences on individuals such as illness, decreased quality of sleep, and fatigue (Dahlgren et al., 2005). Whether resulting in a positive or negative outcome, conceptualized as either job-focused or employee-focused emotional labor (Brotheridge & Grandey, 2002), emotion work is intended to meet workplace demands where employees learn the required emotion rules. Display

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rules, the "behavioral expectations regarding which emotions should be expressed or hidden in a given situation" (Davis, LaRosa, & Foshee, 1992, p. 513), have even been incorporated into job requirements.

Aldao (2013) defined emotion regulation as" a process by which individuals modify their emotional experiences, expressions, and physiology and the situations eliciting such emotions in order to produce appropriate responses to the ever-changing demands posed by the environment" (p. 155). Emotion regulation often refers to one who is interested in regulating his or her own emotions. Gross (2015) referred to this as intrinsic emotion regulation. Alternatively, a person can be interested in regulating another person's emotions, which the author refers to as extrinsic emotion regulation. A predominant point in all theories of emotional labor is the notion that employees follow emotional display rules that define the appropriate expression of emotions on the job (Diefendorff & Richard, 2003).

Shuck et al. (2013) confirmed Diefendorff and Richard's (2003) findings that being able to manage one's emotional displays through using strategies like keeping a positive attitude despite difficulties and not allowing negative events to affect one's mood increases the likelihood of positive outcomes. Supervisor and coworker incivility, however, depletes emotional resources and may make the targeted individual less able to manage their emotions appropriately at work because incivility elicits negative emotions (e.g., anger and fear) that can provoke aggressive, counterproductive responses (Niven et al., 2013; Porath & Pearson, 2012). Thus, we argue that:

H2: There is a negative relationship between supervisor and coworker incivility and emotion management.

2.4. Incivility, Emotion Management and Job Satisfaction

Some research has examined emotion management as a mediator between workplace incivility and employee outcomes. Due to the increasing number of service-related jobs, for example, customer incivility has become an increasingly common workplace stressor. Employees exposed to customer incivility and aggressive behaviors have been shown to experience emotional exhaustion, burnout, depression, and poorer health, well-being, which have negative associations with job satisfaction, organizational commitment, and job performance (Boyle, Koritsas, Coles, & Stanley, 2007; Grandey, 2003).

The theoretical reasons behind the links between emotion management and employee outcomes like job satisfaction can be traced to Hochschild's (1990) work that linked emotion management in the form of evocation and suppression to employee outcomes. When organizations require the employee to induce or suppress feelings to meet a display rule for appropriate emotional expression, despite one's true feelings, this can increase stress and decrease job satisfaction. On the other hand, in an extension of Hochschild's work, Humphrey et al. (2015) pointed out that emotion management or emotional labor in the form of deep acting (display of true feelings) versus surface acting (faking positive emotions) can have positive outcomes on job performance, organizational commitment and job satisfaction. Therefore, when employees are permitted more autonomy to use positive emotional display strategies that entail the expression of true, positive emotions, then positive outcomes are more likely.

Sliter et al. (2010) examined customer behaviors, such as when customers were rude, impolite, and/or discourteous, and found that customer incivility was related positively to emotion exhaustion and negatively to employee customer service performance. The researchers also found that incivility was negatively associated with emotion management, and emotion management acted as a partial mediator between customer incivility and customer service performance. If an employee was being treated in an uncivil fashion, surface acting (faking emotions) likely ensued to manage negative feelings, and displayed

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a positive emotional expression despite the incivility and true feelings. Yet, for individuals that were able to express their emotions or otherwise express them without active suppression, negative outcomes were less likely. In this research, as with Slater et al. (2010), we contend that emotion management will be a partial mediator of the incivility-job satisfaction relationship.

Based on the above, we hypothesized that:

H3: Emotion management will partially mediate the relationship between supervisor and coworker incivility and job satisfaction.

3. METHOD

This research used a nonexperimental quantitative design to test the three hypotheses. Nonexperimental designs can be particularly useful in the early stages of research for empirically testing the magnitude and direction of relationships among the research variables (Howell, 2002).

3.1. Participants and Procedures

The final sample consisted of 268 full-time working adults; 51.2% men; mean age = 36.70 years (SD = 11.78) attending a large university in the southern United States. Trained graduate students collected the sample of working adults for this research. The students were guided by a 2 hour and 45 minute research methods lecture, which was part of a doctoral-level course. No extra course credit was provided. A pilot study was first conducted with 20 working adults to seek information about instruction and item clarity, and completion time. No issues arose when piloting the survey battery. The paper-and-pencil survey batteries then were administered over a one-month period during class times; completion time was roughly 20 minutes. Because of incomplete data, 12 of the surveys were excluded, leaving the final sample of 268. Roughly 15% of the participants were supervisors, 15% administrative aids and the remainder workers of various types (e.g., social worker, banker, waiter, soldier, delivery). The data revealed that 68.9% of the participants were White, 19.1% Black, 5.6% Hispanic, 3.3% Asian, and 3.1% "Other."

3.2. Research Instruments

Each of the instruments used in this research was supported by reliability and validity evidence presented by the respective instruments' authors from similar research samples, as well as the research literature.

3.2.1. Job Satisfaction

This study measured job satisfaction using Hackman and Lawler's (1971) global job satisfaction scale. The Cronbach's alpha for this instrument was .71, with items measured on a 5-point Likert scale that ranged from 1 (strongly disagree) to 5 (strongly agree). Higher scores represented greater job satisfaction. A sample item was "I get a great sense of personal satisfaction when I do this job well."

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3.2.2. Incivility

Incivility was measured in two ways; that is, supervisor and coworker incivility. Participants were asked if they were the target of either supervisor incivility or coworker incivility. Onlooker incivility was not measured in this research. Each of the two 12-item scales was developed by Ghosh, Reio & Bang (2013). The items were identical for each scale, but the instructions differed. For supervisor incivility, participants were asked how often they were in situations over the past year where supervisors were uncivil toward them. For coworker incivility, the participants were asked how often coworkers were uncivil toward them over the past year. The responses to the incivility items were assessed on a 5-point Likert-type scale from 1 (never) to 5 (most of the time). The Cronbach's alphas for the supervisor and coworker incivility scales were .94 and .95, respectively. Example items were "Made demeaning or derogatory remarks about you?" and "Gave you the silent treatment?"

3.2.3. Emotion Management

Emotion management was measured using a modified version of the Emotion Management Behavior scale (EMB; Diefendorff & Richard, 2003). The scale is in essence a measure of the behavioral strategies one might employ to manage their behaviors at work (e.g. "I display excitement and enthusiasm at work"). Instead of coworker or supervisor ratings, which were not possible for this study, we opted to make the measure a self-report to be consistent with the other measures in this research. The Cronbach's alpha for this instrument was .85 in the current study, with items measured on a 5-point Likert scale that ranged from 1 (strongly disagree) to 5 (strongly agree). This result mirrored Diefendorff and Richard's (2003) reported reliability of the original instrument. The items assessed how well one expressed positive emotions and suppressed negative emotions in their emotion displays at work. Higher scores represented an employee's ability to manage emotional display behaviors better, while lower scores suggested an employee's lack of ability to manage emotional display behaviors at work.

3.2.4. Demographic Characteristics

The survey battery also included five demographic questions: sex, age, ethnicity, education level, and job title to address demographic characteristics of the participants.

3.2.5. Control Variables

We did not include control variables in this study. Research methodologists suggest the use of control variables requires a sound theoretical and/or empirical rationale for doing so (Howell, 2002) and the literature is unclear about the relevance of demographic variables to this line of research. For instance, Diefendorff and Richard (2003) did not control for demographic variables in their original study. Notwithstanding, we conducted a two-way MANCOVA to investigate the possible effects of gender and race on supervisor incivility, coworker incivility, emotion management behavior and job satisfaction, while controlling for age. Using SPSS 20.0 to conduct the analyses, the MANCOVA results suggested no significant interaction between gender and race (Wilks' $\Lambda = .952$, $F(16, 1320) = 1.343$, $p = .162$). Further, the covariate (age) did not significantly influence the combined dependent variables (Wilks' $\Lambda = .984$, $F(4, 432) = 1.745$, $p = .139$). Last, gender (Wilks' $\Lambda = .972$, $F(12, 1302) = 1.035$, $p = .414$) and

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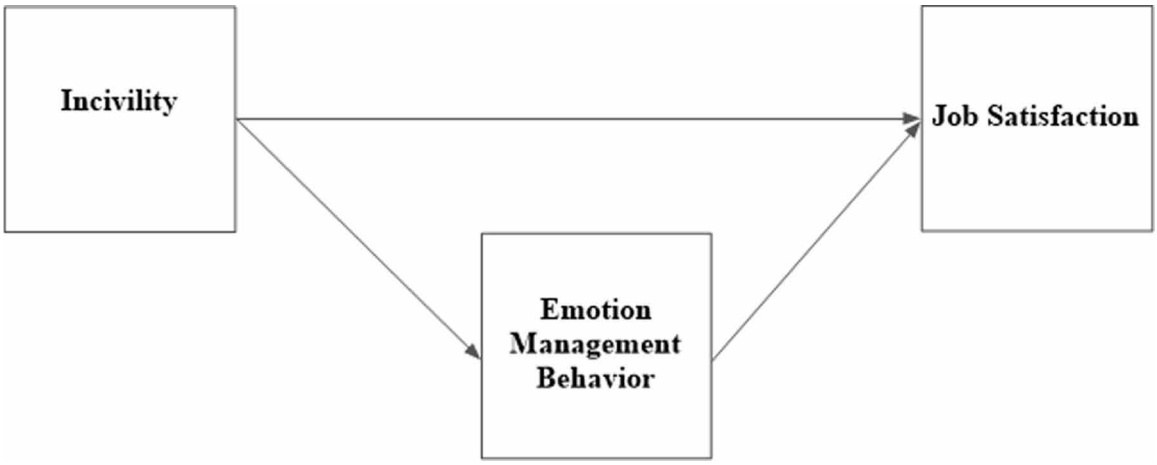
race/ethnicity (Wilks' $\Lambda = .961$, $F(16, 1320) = 1.081$, $p = .368$) did not demonstrate main effects on the combined dependent variable. Thus, because the demographic variables did not demonstrate significant effects, no control variables were included in the final analyses of the conceptual model.

4. DATA ANALYSIS

Because the data were self-reported where information was collected from the same data source at one point in time, we took a combined procedural and statistical approach to reduce the likelihood of common method variance bias (Podsakoff et al., 2003; Reio, 2010). First, we pilot tested the survey battery to certify the directions were clear, the items were unambiguous, and all the responses required equal effort (e.g., avoided double-barreled questions). Second, we counterbalanced the order of questions with each participant. Third, we safeguarded the anonymity of the participants and informed them there were no preferred or correct answers; to be more precise, we desired honest appraisals of each item. Fourth, as a statistical diagnostic procedure, we used Harmon's single-factor test to detect the presence of one or more factors. If there is more than one factor, as was the case for this research (three with eigenvalues greater than one; 61.2% of variance explained), then CMV bias is less likely. The combination of both approaches supported the notion that CMV was not likely a problem in this research.

Next, we used confirmatory factor analysis (CFA) to verify how well the variables defined their respective constructs (Guarino, 2004) using the LISREL 8.72 program. Structural equation modeling (SEM) was then performed to test the first three research hypotheses, assessing how well the data fit the proposed model (see Figure 1).

Figure 1. Hypothesized model of incivility, emotional management and job satisfaction



5. RESULTS

The following represents the analyses conducted to test the three hypotheses.

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5.1. Testing the Measurement Model

The measurement model included 36 items comprising the two incivility scales (12 items each), supervisor and coworker incivility, emotion management (6 items) and job satisfaction (6 items). The CFA results revealed that the items for each construct significantly loaded on their corresponding construct with their factor loadings above .4 for the respective manifest variables. The chi-square test was significant ($\chi^2 = 1688.02$, $df = 610$, $p < .001$), which is regarded as unacceptable. However, the chi-square test of absolute model fit tends to be affected by large sample sizes and non-normality in the underlying distribution of the input variables (Kline, 1998). Several other measures of fit were subsequently used to examine the overall fit of the model to the data as well. The alternative fit indices indicated that the measurement model had a reasonable fit to the data: RMSEA = .09, dG (geodesic discrepancy) = .04, and the dULS (unweighted least squares discrepancy) = .08 (Dijkstra & Henseler, 2015a). The RMSEA, dG and dULS met the recommended criteria of .10 or less (Dijkstra & Henseler, 2015a) for a reasonable fit. Therefore, the results indicated that the measurement model achieved an adequate fit for the proposed factor dimensions, providing evidence of factorial and convergent validity of the study's measurement (Bagozzi & Yi, 1988).

5.2. Descriptive Statistics

Skewness and kurtosis statistics revealed that the data were reasonably normally distributed (values were less than \1.00\); therefore, there was not a need to transform the data (Tabachnick & Fidell, 2013). Investigation of the intercorrelations among the supervisor ($M = 20.51$; $SD = 10.10$) and coworker ($M = 26.89$; $SD = 11.78$) incivility, emotion management ($M = 21.75$; $SD = 3.28$), and job satisfaction ($M = 21.58$; $SD = 4.10$) variables, along with their means and standard deviations (see Table 1), indicated that all the correlations were significant and in the direction suggested by theory and research (see Table 2). As expected, supervisor and coworker incivility overlapped somewhat, but modestly so ($r = .44$, $p < .001$). Supervisor ($r = -.24$, $p < .001$) and coworker ($r = -.18$, $p < .05$) incivility were negatively related to emotion management. The dependent variable job satisfaction was significantly related with supervisor ($r = -.36$, $p < .001$) and coworker ($r = -.16$, $p < .001$) incivility and emotion management ($r = .40$, $p < .001$). Overall, the combination of the correlation and CFA results suggested initially that the two incivility components, emotion management and job satisfaction constructs were sufficiently distinct from each other; thus, they represented unique constructs.

5.3. Structural Model (Testing Hypotheses)

Considering that the previous MANCOVA analyses did not indicate significant effects of the demographic variables (gender, race, age) on the combined dependent variables, the control variables were not included in any subsequent analyses in this research. We use the Sobel test (Sobel, 1982) instead of bootstrapping to test for mediation. Koopman, Howe, and Hollenbeck (2014) decry the mistaken notion or "urban legend" that bootstrapping is somehow superior to the Sobel test. Actually, in their research, they found that the Sobel test was superior for use with small samples, and was adequate for samples larger than 140 as in this research. They found no evidence that bootstrapping was superior; rather, it was prone to Type I error with moderate or large effect sizes, while the Sobel test was not. In light of this information, we focus on the Sobel test.

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Table 1. Descriptive Statistics of Research Variables (N = 268)

Variable	*M*	*SD*	Skewness	Kurtosis
Supervisor Incivility	20.51	10.10	.97	.81
Coworker Incivility	26.89	11.78	.87	.70
Emotion Management Behavior	21.75	3.28	-.20	.21
Job Satisfaction	21.58	4.10	-.43	.35
Age in years	36.70	11.78	.37	-.31

Table 2. Intercorrelations among Research Variables

Intercorrelations among Research Variables

Variables	Satisfaction	SuperInciv	CowInciv	EMB
Satisfaction	1.00			
SuperInciv	-.36***	1.00		
CowInCiv	-.16***	.44***	1.00	
EMB	.40***	-.24***	-.18*	1.00

Note. $N = 268$. SuperInciv = Supervisor Incivility; CowInCiv = Coworker Incivility; EMB = Emotion Management Behavior.

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5.3.1. Hypothesis 1

The SEM results showed that the path addressing the negative effect of supervisor and coworker incivility with the dependent variable had a reasonable fit to the data. Although the chi-square value ($\chi^2 = 2001.14$, $df = 133$, $p < 0.001$) was significant, other fit indices indicated a good fit of the model (RMSEA = .087; dG = .03; dULS = .07). The direct negative effect of experienced supervisor and coworker incivility on job satisfaction was accepted ($\beta = -.24$; $p < 0.001$). Thus, the hypothesis was fully supported.

5.3.2. Hypothesis 2

The results revealed that the model had an acceptable fit to the data (RMSEA = .08, dG = .03; dULS = .07), ($\chi^2 = 8146.62$, $df = 123$, $p < 0.01$). Supervisor and coworker incivility was found to have a significant, direct negative effect on emotion management ($\beta = -.25$; $p < 0.001$). Thus, the hypothesis was fully supported.

5.3.3. Hypothesis 3

According to the SEM results, the data had an acceptable fit to the proposed model ($\chi^2 = 828.49$, $df = 427$, $p < 0.001$, RMSEA = .080). Supporting the third hypothesis, all the relationships were found to be significant. The absolute value of the Sobel test (Sobel, 1982) statistic $4.53 > 1.96$ indicated that the indirect effect of experienced supervisor and coworker incivility on job satisfaction via emotion management was significant. This corroborates the notion that although the incivility (negative effect) and emotion management (positive effect; $\beta = 0.34$, $p < .001$) variables have direct effects on job satisfaction, incivility also has an indirect effect on job satisfaction occurring through emotion management. Considering that the direct effect of incivility on job satisfaction was significant, then emotion management partially mediated the incivility-job satisfaction relationship (see Figure 2).

6. DISCUSSION AND IMPLICATIONS

This research investigated the role of emotion management in mediating the relationship between incivility and job satisfaction. As hypothesized, emotion management partially mediated the relation between experiencing supervisory and coworker incivility and job satisfaction. Further, incivility had a direct, negative effect on emotion management and job satisfaction, while emotion management also had a direct positive effect on job satisfaction.

These results integrate theory on incivility, emotion management and job satisfaction. First, finding that incivility originating from both supervisors and coworkers had a negative effect on emotion management behavior supports Hochschild's (1990) theoretical notion that experiencing uncivil, unpleasant behaviors can influence the target's emotion management behaviors in that one's ability to somehow express positive emotional displays, while concurrently suppressing negative emotional displays, can be lessened significantly. Moreover, the finding that emotion management had a positive effect on job satisfaction also supports Hochschild's theoretical work. Being able to successfully manage one's positive emotional display behaviors indicates that positive outcomes may be more likely in workplace settings. In this case, job satisfaction was enhanced. Second, Andersson and Pearson's (1999) Tit-for-Tat Incivil-

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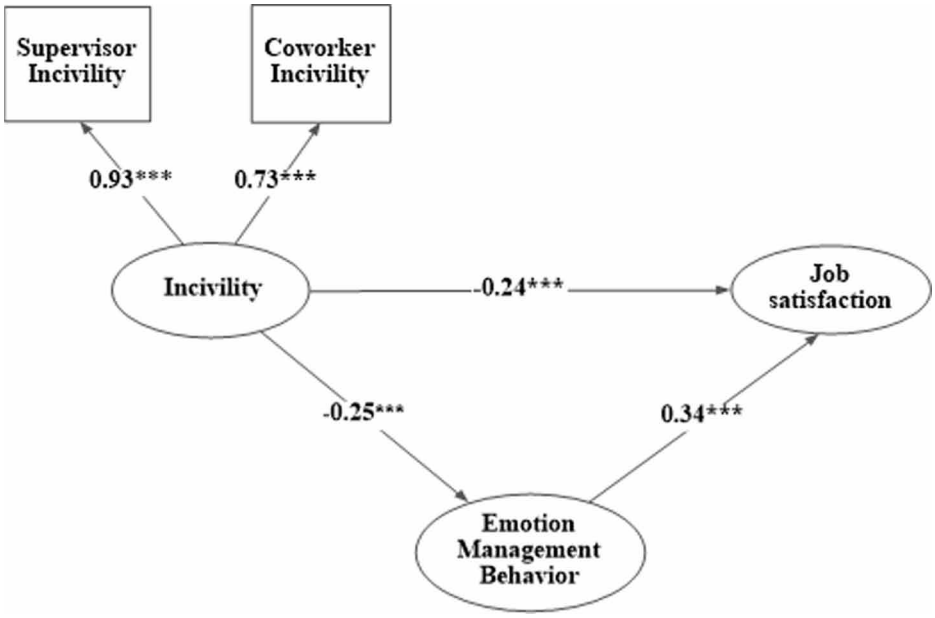
ity theory was enriched because we found evidence that uncivil behavior originating from two sources, supervisors and coworkers, negatively influenced job satisfaction directly, as predicted by this theory, but its effect was carried also through the emotion management variable. In an extension of Tit-for-Tat theory, uncivil behaviors are linked therefore to not only one's positive and negative emotions (Fox & Stallworth, 2005), but also to being able to employ strategies to regulate one's emotion display behaviors (Welbourne et al., 2016). This understanding should better inform future research and practicing managers about how emotion management skills can minimize the negative consequences of incivility.

Although not a primary focus of this study, some of the demographic analyses warrant discussion. First, similar to Cortina et al. (2001) and Reio and Trudel (2013), the large majority of participants experienced supervisor and coworker incivility at least a few times over the past year. Being "paid little attention to" and "putting you down" were the two most frequently occurring incivilities from supervisors. Being "snapped at" and "doubting one's judgment on a matter over which you have responsibility" were the incivilities instigated most by coworkers. Importantly, a significant number of participants experienced supervisor incivility (13%) and coworker incivility (11%) frequently to most of the time. This is alarming as this arguably demonstrates that the uncivil behavior can stray from being ambiguous as to harmful intent to an intentional pattern of harmful behavior, which constitutes bullying (Andersson & Pearson, 1999). Interestingly, after controlling for age, the MANCOVA results failed to reveal significant gender or race differences in experiencing either kind of incivility, or emotion management and job satisfaction as outcomes of incivility, which is in contrast to prior research. For example, Reio and Ghosh (2009) found that younger White men instigated uncivil behavior more than women, and any age or ethnic group in their research. Montgomery et al. (2004) found sex and race differences in the outcomes of incivility. Notwithstanding, the women in this study engaged in as much emotion management and were just as satisfied as the men. These findings speak to Lim et al.'s (2008) contention that women were no less resilient than men when being treated inappropriately in the workplace.

Figure 2. Final model of incivility and emotion management linked to job satisfaction



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Our conceptual model hypothesized that the effects of supervisor and coworker incivility on job satisfaction were mediated by emotion management. The results of our SEM analyses certainly revealed direct negative effects of supervisory and coworker incivility on emotion management and job satisfaction. Thus, holding all else constant in the model, a standard deviation increase in incivility would "cause" a .24 standard deviation decrease in emotion management behavior and a .25 standard deviation decrease in job satisfaction. On the other hand, the results also demonstrated an indirect effect, in that incivility had a direct effect on job satisfaction, but also an indirect effect carried through the emotion management variable. While the direct negative effect of supervisory and coworker incivility on job satisfaction was found, corroborating earlier research (e.g., Lim et al., 2008), the negative consequences of incivility may not necessarily be as harmful as previously argued (Lim & Cortina, 2005; Montgomery et al., 2004; Pearson & Porath, 2005; Reio & Ghosh, 2009) if the effect can be mitigated through the presence of a mediator variable like emotion management (Lim et al., 2008).

The results suggest there may be potential emotion management strategies that could be leveraged to combat and reduce incivility's negative effects. For example, employees could be trained to develop emotion management skills and strategies (these skills could be evaluated as part of the hiring process) for coping with stressful situations, like those times when being targeted for uncivil behaviors. Hochschild (1990) and Schmidt and Diestel (2014) recommended helping employees develop the use of evocation and deep acting strategies instead of suppression and surface acting strategies to manage one's emotions when dealing with organizational stressors. Introduction to and refinement of additional proactive coping strategies like the use of humor, praying, positive thinking, developing greater professional competency, and stressful situation avoidance could also be beneficial (Rafati et al., 2017).

7. LIMITATIONS AND IMPLICATIONS FOR FUTURE RESEARCH

As in any study, there were limitations. First, because this was a nonexperimental quantitative study, the nature of the data precludes strong claims concerning causality and time-related changes. Still, extensive theory and research supported both the use of such a research design and our interpretations of the findings. To extend this research, the model could be tested experimentally through introducing an intervention designed to implement positive emotion management strategies to corroborate the outcomes of this study. The study could also be extended by using a longitudinal design where the variables could be examined over time. Second, although the research design was consistent with most quantitative organizational research, the study used single-source data collected at one time, possibly introducing CMV bias into the study. However, the researchers followed recommended procedures to reduce its likelihood and conducted statistical procedures to test for its presence (Podsakoff et al., 2003; Reio, 2010). By counterbalancing the items, ensuring clarity of instructions and items in combination with conducting Harman's single-factor test, little evidence suggesting CMV bias was found. Future organizational research that includes steps to collect data at least two times (separate collection of data associated with the independent variables from data associated with the dependent variables; dependent variables should be collected first) with differing source data (e.g., self, coworker, supervisor, client) would further substantiate the outcomes of this research without the possible hindrance of CMV bias.

Another limitation might have been the use of full-time working adult students as participants, although this method has been employed effectively numerous times in prior organizational research. An alternative method might be targeting full-time employees in select profit and nonprofit workplace

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settings, both nationally and internationally to extend this research further. Moreover, because it was impossible to calculate response rates in this study, new research could be conducted in settings where response rates could be determined and possible nonresponse bias could be evaluated to guard against introducing systematic bias into the study.

Because of the possible sensitivity of collecting incivility data and the existence of a number of well-validated measurement tools, we used self-reports in this study. However, examining notions about the process of emotion management and how and why experiencing supervisor and coworker incivility may be linked to job satisfaction and other organizational outcomes (e.g., job performance, engagement, voluntary turnover) could be augmented more by mixed-method and qualitative research. Case studies and phenomenological inquiry designed to acquire a richer, deeper sense of how and why the often-deceptive influences of being treated uncivilly can have negative short-and long-term consequences.

7.1. Implications for Practice

Understanding that this research was nonexperimental and not causal in nature, recommendations for practice based upon these findings should be made tentatively. Still, preliminarily, there is sufficient evidence to indicate that uncivil behavior is occurring all too often and that employees at all levels of the organization need to be aware that it is associated with negative outcomes. Such behavior is not just some silly, private interpersonal issue; rather, it is unnecessary and can spiral into bullying and physical violence (Andersson & Pearson, 1999; Rosen et al,. 2016). Organizations need to find ways to discourage such behavior or face the consequences. Perhaps some training and education of employees in this matter can have a positive influence.

Pearson and Porath (2005) suggested some useful proactive strategies to discourage incivility including: having senior leadership set expectations for appropriate, respectful conduct, recruiting and select civil employees, and soliciting and listening to feedback and acting as needed. Trudel and Reio (2011) suggested training activities could be designed to increase incivility awareness and reduce interpersonal conflict. Counseling services could be provided also to help employees deal more effectively with stress arising from being the target of uncivil behavior. Finally, emotion management strategy training could be offered to help employees manage their emotional displays properly, even when experiencing uncivil behavior. Schmidt and Diestel (2014) recommended training to help employees employ psychologically healthy deep acting on a daily basis to help cope with stressful situations, such as being the target of uncivil behavior. Thus, the suppression and surface acting strategy would be identified and subsequently eschewed in favor of an evocation and deep acting strategy.

8. CONCLUSION

Workplace incivility demonstrated two paths to job satisfaction. One was a path with a strong, direct negative effect and the other was through the partial mediation of emotion management. Organizational researchers and practitioners can do much to help managers and organizations through conducting research that can inform the practice of reducing and preventing the seemingly insidious effects of incivility on managing emotions and being satisfied with one's job.

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Training in the workplace can reduce negative behaviors and consequences. In addition, business educators preparing the next generation of managers can raise awareness of incivility and its effects, as well as how emotion management can mediate the effect of workplace incivility on job satisfaction.

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Chapter 64
Discrimination Against People With HIV and AIDS in the Workplace:
A Lagos State Example

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ABSTRACT

The main thrust of the chapter was to explore the discrimination experienced by people living with HIV and AIDS (PLHIV) in the workplace in Lagos State. A purposive sample of 80 PLHIV was selected from two local government areas (LGAs) of Lagos state: Epe, a rural setting, and Lagos Mainland, an urban one. Secondary data were obtained from internet sources while primary data were collected through structured interviews September 2005–April 2006. Data were analyzed using SPSS versions 11 and 13. Data between and within the rural and urban areas were also analyzed comparatively. The results indicate that PLHIV experienced instant dismissal from offices, mandatory HIV tests, alienation, denial of promotion, and exclusion from insurance schemes. This indicates that PLHIV's rights were violated. The study recommends intensive HIV education and enforcement of national HIV policy and international legal instruments in the workplace to protect PLHIV's rights.

INTRODUCTION

According to Joint United Nations Programme on HIV/AIDS (UNAIDS) Data (2017), 36.7 million people were living with HIV and AIDS (PLHIV) in 2016. Sub Saharan Africa bears the highest burden of the pandemic with about two-thirds of the global number of PLHIV. Nigeria has the second largest HIV epidemic in the world with 3.2 million people and has one of the highest new infection rates in sub-Saharan Africa in 2016 (UNAIDS, 2017). HIV has decimated world population. Globally, many people have died due to AIDS and about one million died of the disease in 2016 alone (UNAIDS, 2017).

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HIV attacks and interferes with the immune system. It can progress to AIDS if not diagnosed early. This will make infected people vulnerable to infections. Although HIV cannot be cured, it can be effectively controlled with antiretroviral therapy (ART) so that it may not progress to AIDS. This implies that PLHIV can continue to be productive members of the workforce (Fit for Work Team, 2015). However, its incurability and association with promiscuity and homosexuality has accentuated social discrimination. Furthermore, ignorance of the disease and the phobia it provokes in people have resulted in self-defence mechanisms among the public including employers and colleagues in the workplace and have occasioned the rejection of the PLHIV by segregation, exclusion, or the denial of equal opportunities (Nwanna, 2011).

Discrimination may occur in different forms and in various settings including the workplace, healthcare facilities, local communities and the family. In Nigeria, people care for one another when sick but when one is living with HIV, people tend to run away from that person. HIV-related discrimination has become a powerful tool of social control. It can be used to marginalize, exclude or manipulate PLHIV covertly or openly. Studies have shown that PLHIV were dismissed from their jobs due to their HIV status (Owolabi, Araoye, & Osagbemi, 2011). The study in this chapter would contribute to the formulation of policies that would favour PLHIV and protect their rights.

HIV-discrimination undermines HIV prevention efforts and the ability of people to access and adhere to treatment. Acts of discrimination deny people's rights to information, to services to protect them against HIV infection, and to receive appropriate treatment, care and support when HIV-positive. Although discrimination is not experienced by every PLHIV, it may bring about conditions of stress, low self-esteem, suicide, job losses, unemployment, and dislocation among PLHIV who have experienced it (Nwanna, 2011). Shosanya (2015) reported that there had been cases of employers terminating services of infected persons and there were few or no known employers who were willing to employ identified PLHIV. Most of the employers always hinged on the fact that it was their prerogative to employ whoever befits their organizations. Shosanya (2015) went on to state that the stigmatization of the PLHIV had continued to hang on the necks of PLHIV like an albatross, despite their hues and cries to the society to morally rekindle their survival and support them to live a worthy life. In view of this, Lagos State government enacted a law in 2007, to protect persons living with HIV and affected by AIDS and to prevent discrimination of any type against any PLHIV particularly in matter of employment (Shosanya, 2015). Discrimination against PLHIV continues to be pervasive in Nigeria to the extent that in 2014, the immediate past president, Goodluck Jonathan, signed into law an Antidiscrimination Bill that protects the rights and dignity of PLHIV (Shosanya, 2015). Despite these laws, discrimination continues unabated. Furthermore, there are very few empirical studies on the forms of discrimination against PLHIV in the workplace particularly from the perspective of PLHIV. In the light of the afore-stated, this study set out to investigate the forms of discrimination experienced by PLHIV in the workplace in Epe and Lagos Mainland local government areas (LGAs) of Lagos State.

BACKGROUND

As far back as 1958, the UN International Labour Organization (ILO) Discrimination Convention (No. 111) in Article 1 subsection1 (1a) defines discrimination as "any distinction, exclusion or preference made on the basis of race, colour, sex, religion, political opinion, national extraction or social origin, which has the effect of nullifying or impairing equality of opportunity or treatment in employment or occupation as may be determined". However, in the context of HIV and AIDS, Aggleton and Parker (2002)

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assert that discrimination occurs when a distinction is made against a person that results in his or her being treated unfairly and unjustly on the basis of belonging or being perceived to belong to a particular group. According to UNAIDS protocol (2000 cited in UNAIDS, 2005) discrimination is defined as any form of arbitrary distinction, exclusion, or restriction affecting a person, usually but not only by virtue of an inherent personal characteristic or perceived belonging to a particular group—in the case of HIV and AIDS, a person's confirmed or suspected HIV-positive status—irrespective of whether or not there is any justification for these measures.

The concept of stigma will help in understanding the concept of discrimination because discrimination is the acting out of stigmatising attitude. Goffman (1963) describes stigma as an attribute that is deeply discrediting within a particular social interaction that reduces the bearer from a whole and usual person to a tainted, discounted one. His explanation of stigma focuses on society's attitude toward people who possess attributes that fall short of public expectations. Contrary to Goffman's description, Weiss and Ramakrishna (2001) define stigma as a social process or related personal experience characterized by exclusion, rejection, blame, or devaluation that result from an adverse social judgment about a person or group.

In this chapter, therefore, discrimination is presented as negative attitudes, beliefs, attributes, behaviours, activities and experiences that occur in social interactions.

Earlier Studies

In this section, earlier researches will be reviewed beginning from studies conducted in other countries before focusing on Nigeria.

Population Council (2002) reported a qualitative research that was carried out to explore the manifestations of stigma and discrimination in the workplace, family, and community; contribute to the development of appropriate quantitative measures for stigma; and inform stigma reduction intervention activities. The study revealed that many workers expressed fear that they would be isolated, avoided, and ridiculed if their co-workers and managers knew about their sero-positive status. The main manifestation of stigma is social isolation and ridicule. A higher proportion of male respondents (73%) than female respondents (65%) reported cases of social isolation. Similarly, a greater percentage of the male workers (49%) than the females (44%) reported rumours and gossips (Population Council, 2002).

UNAIDS (2011) reported a study that used PLHIV Stigma Index as the instrument in 9 countries in Asia and the Pacific Region namely Bangladesh, Cambodia, China, Fiji, Myanmar, Pakistan, Philippines, Sri Lanka and Thailand. According to UNAIDS (2011), between 16% in Fiji and 50% in Cambodia lost their employment or sources of income while 19% in Fiji to 38% in Philippines were denied opportunity to work while 8–52% had promotion denied or the nature of work changed. Furthermore, many respondents decided to stop work due to discrimination or decided not to apply for a job or promotion. UNAIDS (2011) also revealed that discrimination was pervasive in 3 countries where employer and managers (13–55%), colleagues (15–50%) and clients (0–50%) were not likely to be supportive or more likely to change their behaviours. In conclusion, UNAIDS (2011) asserts that stigma and discrimination are key factors responsible for loss of employment among PLHIV.

Corroborating the above findings, another study that applied PLHIV Stigma Index in 9 countries from 4 regions: Kenya, Nigeria and Zambia from sub- Saharan Africa, Estonia and Poland from Eastern Europe, Malaysia and the Philippines from Asia-Pacific, and Argentina and Mexico from South America, was conducted by The Global Network of People Living with HIV (GNP+), ILO, The PLHIV Stigma

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Index (2012). The research revealed that discrimination was the commonest factor responsible for job loss. The study revealed that many respondents had lost a job or source of income during the preceding 12 months of the study ranging from 13% in Poland to 40% in Kenya and Zambia. It also indicated that many of these PLHIV lost employment as a result of their sero-positive status alone. This ranges from 8% in Estonia to 45% in Nigeria. The results further showed that there are little differences between rural, small and big towns. In most countries, people living in rural areas were more likely to have lost employment as a result of HIV or HIV combined with another reason, however, it was alleged that this did not apply to all countries.

ML dos Santos et al. (2014) adapted The PLHIV Stigma Index and applied it to 500 PLHIV in ten HIV clinics in South Africa. The study found that 12% of the respondents indicated that they had lost their jobs in the 12 months pre-ceding the time of the study. Out of this proportion, more than half declared that their job losses were at least partially due to their sero-positive status either due to discrimination or/and being too sick to work. Also, 8% of them affirmed that they were denied employment opportunity because of their HIV status. ML dos Santos et. al. (2014) therefore concluded that the HIV status negatively affected the working life of PLHIV.

Poni-Gore et al., (2015) conducted a cross-sectional research in Juba, South Sudan from 102 PLHIV and 70 people from the public using standardized well-structured questionnaires and interviews. The study revealed that 60% of PLHIV who were employed did not disclose their HIV positive status at their work places due to fear of losing their jobs. The study also showed that 80% of PLHIV were not denied their jobs implying that about 20% of them suffered denial of employment.

In Nigeria, discrimination in the workplace manifests, most times, in the loss of employment in Nigeria. Akparanta – Emenogu (2002 cited in Nwanna, 2011) and Durojaiye (2003 cited in Nwanna, 2011) conducted qualitative studies and found independently that a naval officer was denied admission into one of the Naval Training Colleges in Rivers State, Nigeria, after being successful at the recruitment test. He was refused admission because of his sero-positive status. The respondent reported that he was admitted as a squadron leader and was later sent to Calabar, the capital of Cross River State for his assignments. An HIV test was run without his informed consent. He was later dismissed claiming that he was HIV+. Similarly, Adirieje (2003 cited in Nwanna, 2011) reported that a nurse was dismissed due to her sero-positve status. According to Adirieje (2003 cited in Nwanna, 2011), the nurse was tested for HIV without her knowledge and consent and was instantly dismissed when the laboratory result declared her sero-positive. Iwuagwu et al. (2003 cited in Nwanna, 2011) found that a Nigerian police woman living with HIV was demoted by the Nigeria Police when her sero-positive status was publicly declared by a media house without her consent.

Another study conducted by Iwuagwu et al. (2003 cited in Nwanna, 2011) showed that human rights of PLHIV have been violated in Nigeria. The study demonstrated the pattern of human rights abuse of PLWHA in Nigeria (Iwuagwu, 2001; 2003 cited in Nwanna, 2011). In this study, three states namely Lagos, Kano and Anambra were studied using focus group discussions (FGDs) that involved 53 PLWHA. The study found that an auxiliary nurse's appointment was terminated because of her sero-positive status. She had worked for five years in the hospital before she became pregnant. She developed boils which led to a laboratory test by the employer. The result of the test showed that she was HIV positive and she was instantly dismissed because the management claimed that they could not afford to put their staff and patients at risk.

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From the above researches, it was observed that empirical evidences from PLHIV about their discriminatory experiences in Nigeria are scant. Most of the existing studies are qualitative. However, The Global Network of People Living with HIV (GNP+), ILO, The PLHIV Stigma Index (2012) investigated PLHIV in Nigeria among nine other countries. Nigerian results will be reviewed here. For Nigeria, 45% of respondents lost their jobs or sources of income due to HIV+ status. The study further revealed that 27% of Nigerian PLHIV lost their jobs or sources of income because of stigma while 26% lost due to stigma and poor health and another 26% due to poor health alone. About 53% lost jobs due to discrimination. Around 27% of the Nigerian respondents were denied employment or work opportunities due their HIV+ status. These findings therefore suggest that HIV-related stigma and discrimination in the workplace are causes of unemployment or a denial of work opportunity in Nigeria. Many Nigerian respondents (62%) had had their job description or nature of work changed, or had been refused promotion as a result of sero-positive status. Nigerian PLHIV respondents reported that 28% and 33% of their employers and colleagues respectively reacted discriminatorily when they became aware of respondents' HIV status (the Global Network of People Living with HIV (GNP+), ILO, The PLHIV Stigma Index, 2012).

From the above literature review, it is obvious that there is a dearth of quantitative studies on the forms of discrimination against PLHIV in the workplace therefore this chapter tends to fill this gap

Theoretical Anchorage

Discrimination is perceived to be an intergroup and interpersonal phenomenon which is related to fundamental processes associated with social categorization and the development of in-group favouritism. This chapter is anchored on social identity theory (SIT). SIT is a cognitive social psychological theory developed in Europe by Tajfel (1982 cited in Mor Barak, 2008). The theory postulates that people tend to classify themselves into social categories that have meanings for them, and this shapes the way individuals interact with others from their own identity group and from other groups. Mor Barak (2008) uses SIT to explain workplace exclusion and discrimination. According to her, social identification, categorization and comparison are very important aspects of SIT relevant to workplace exclusion and discrimination. Social identification leads to activities that are congruent with the group's collective identity, that support institutions that embody their identity, and that foster stereotypical perceptions of self and others (Mor Barak, 2008, p. 245). Social categorization is a cognitive tool that is used to "segment, classify, and order the social environment, and thus enable the individual to undertake many forms of social actions" (Mor Barak, 2008, p. 246). After people categorize themselves within a group and identify themselves as being members of that group, they tend to compare their group (the in-group) against other groups (out-groups). To maintain their self-esteem, they and group members will compare their group favourably against other ones. This helps to explain prejudice and discrimination, since a group will tend to view members of competing groups negatively to increase self-esteem. In this chapter therefore, employers and colleagues of PLHIV will see themselves as being members of in-group while they see the PLHIV as members of the out-group thereby excluding and discriminating against them.

This SIT explains why colleagues and employers exclude and discriminate against the PLHIV from participating in some social activities and use of official facilities particularly when they do not have full knowledge of the modes of transmission and prevention of HIV infection.

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MAIN FOCUS OF THE CHAPTER

Methodology

The study was conducted in two local government areas (LGAs) of Lagos State namely Epe and Lagos Mainland. Epe LGA is a rural riverine area with 95 localities and a population of 181,409 by 2006 census (Federal Government Printer [FGP], 2007). It was considered to be an urban in 2010 (Federal Ministry of Health (FMOH), 2010). The people are predominantly Ijebus (a Yoruba sub-ethnic group), farmers, polygynyous, and Muslims. The LGA was chosen because of her high HIV prevalence rate which was 6.9% in 1999 (NIMR, 2000a) although it has dropped to 2.7% by 2010 (FMOH, 2010). Factors identified as driving the HIV infection then include poverty, promiscuity, low economic status of women, early marriages that often lead to early separation, polygyny, changing of spouses, skin scarification (FHI, 2001) and fishing (Elwange & Nahamya, 2005).

Lagos Mainland LGA, an urban setting, has 17 localities with a population of 317,720 by 2006 (FGP, 2007). Lagos Mainland LGA was selected because of the presence of Nigeria Institute of Medical Research (NIMR), Yaba, one of the popular centres for the National ART Programme in Nigeria that assisted in accessing the PLHIV. Its HIV prevalence rate has not been established but it is estimated to fall within the range in Lagos metropolis i.e. between 3.3% in Ikeja LGA, the state capital and 6.3% in Lagos Island LGA (FMOH, 2010).

Sample Size

The sample size was intended to be 100 (50 from each LGA) but 80 PLHIV were accessed: 30 from Epe LGA and 50 from LM LGA. Among the 80 PLWHA surveyed, 30 (37.5%) were men while 50 (62.5%) were women.

Ethical Considerations

Research ethics were fully observed with the approval of Institutional Review Board (IRB) of Nigeria Institute of Medical Research (NIMR), Yaba, Lagos. The respondents gave their oral informed consent and were also reassured that their data would be treated with strict confidentiality.

Data Collection

Four research assistants (RAs) who were graduates of the Department of Sociology, University of Lagos, were recruited based on their possession of adequate social research skills and experience. The RAs were trained for two days to enhance the quality of the data collected. Secondary data obtained from internet sources, books, reports etc. were reviewed while the primary data were collected from September 2005 to April 2006 using structured questionnaires. Besides the background data, the questionnaire contained other questions like: if the employers and co-workers knew about the HIV positive status; their employers' and colleagues' attitudes and behaviours towards them when they got to know their status; if PLHIV were mandated to have HIV tests; whether they were deployed to other departments or units on the basis of their HIV status; If they were isolated in separate offices because of HIV status; if their movements were ever restricted to certain areas within the premises; whether they shared toilets, canteen, etc. with

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other workers; whether they have ever been denied access to sports/recreational facilities; Ever been denied promotion because of their HIV status; if their organisations had health insurance scheme and if they were allowed to participate in the insurance scheme if available.

Data Analysis

Data were analyzed using the Statistical Package for Social Sciences (SPSS) versions 11 and 13. Analyses were run for quantitative and comparative data using descriptive, bivariate and Chi square statistics at 0.5 level of significance.

Fieldwork Challenges

Identifying the PLHIV in Epe was a major challenge. Only 30 PLHIV out of 50 of Epe respondents were investigated. Out of these, 20 were reached in Epe General Hospital while 10 were studied at NIMR, Yaba. NIMR is one the major sites for ART in Lagos State. It was gathered from Epe General Hospital that when people tested positive, they would be referred to NIMR for confirmatory tests. It was reported that some of them never reverted to Epe General Hospital. By such, they would be lost. The probable reason for this could be that they chose to continue with NIMR for anonymity and/or to avert facing discrimination.

Findings

Table 1 presents the profile of the respondents. The ages of the PLHIV ranged from 18 to 61 years. More than two-fifths of the respondents were between 30 – 39 years with a mean age of 36.26 years. More Epe respondents (48%) than Lagos Mainland (41%) were aged 30 – 39 years category with mean ages, 36.31 years and 36.22 years respectively. This difference is not significant. Almost one-third of respondents (33%) were never married and more of these were from Lagos Mainland (34%) as against and 30.0% of the Epe LGA respondents. Among the married respondents, 50.0% were from Lagos mainland while 23% came from Epe. A significant proportion (28%) of the PLHIV was divorced, separated and widowed. There was a higher percentage of the divorced, separated and widowed PLHIV in Epe LGA (46.6%) than in Lagos Mainland LGA (16%). The difference between the two LGAs is statistically significant at $p< 0.5$.

Majority of the respondents could be said to be well educated as 44% and 36% had secondary and post-secondary education respectively. Lagos Mainland LGA had more of this category than Epe LGA. This is expected since Lagos Mainland LGA is an urban setting. However, Epe LGA had more PLHIV with primary education (30%) than those with tertiary education (27%). The difference between the two LGAs is statistically significance with X^2 of 9.386; degree of freedom ($df = 3$) at $p < 0.05$. Employment status indicates that 42% of the respondents were unemployed. This proportion represents 43% and 42% of Epe and Lagos Mainland respondents respectively. Around 57% were employed disaggregated into 41% of self-employed PLHIV and 16% of PLHIV in paid employment. Comparing the two LGAs shows that Epe LGA had more self-employed PLHIV (47%) than Lagos Mainland (38%). A higher proportion of Lagos Mainland respondents (20%) than Epe (10%) were engaged in paid employment. These differences between the LGAs are not statistically significant.

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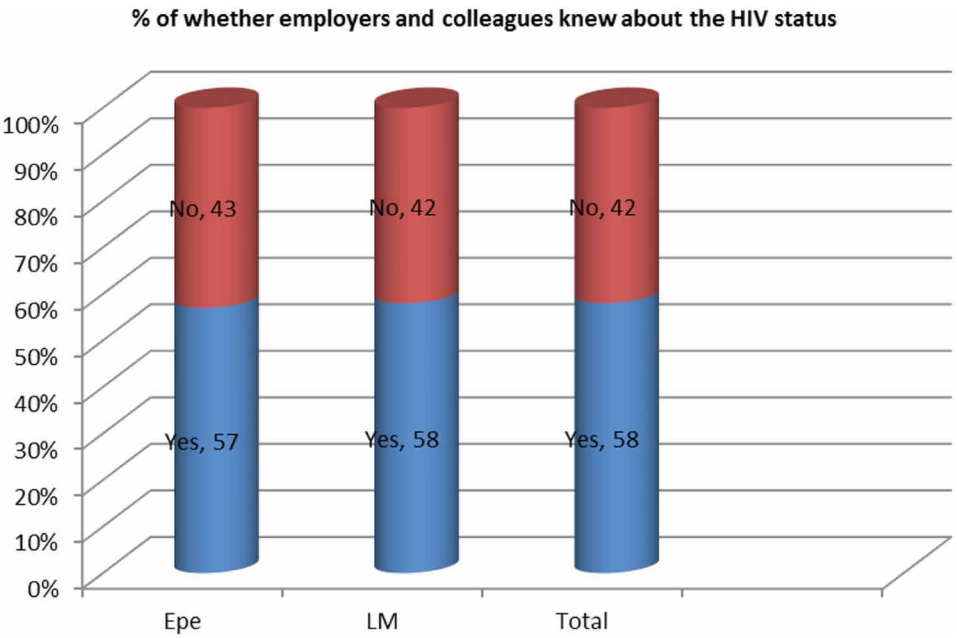
With respect to income, equal proportion of unemployed PLHIV (42%) was also not receiving any income at the time of the study. Moreover, a significant proportion (24%) earned less than N10, 000.00 a month. The average income of the PLHIV was N9,198.55. This is below the current national minimum wage of N18,000 therefore many of the respondents belong to the lower income group. Disaggregating the respondents into LGAs shows that 37% of Epe LGA respondents compared to 16% of Lagos Mainland LGA respondents earned less than N10,000 per month. On the other hand, more Lagos mainland respondents (26%) than Epe respondents (10%) earned more than N10,000 per month. The differences are statistically significance ($X^2 = 5.782$; df = 3; $p > 0.05$).

Forms of HIV-Related Discrimination Experienced by PLWHA in the Workplace

The study examined the different forms and levels of discrimination in the work place. Before HIV-related discrimination could be explored in the work place it was pertinent to consider if the employers and co-workers of the PLHIV knew about their sero-positive status. The respondents were asked to declare if their employers and colleagues were aware of their sero-positive status and if they were, to describe their attitudes towards the PLHIV.

The column chart in Figure 1 presents the knowledge of the respondents' HIV positive (HIV+) status by the employers and colleagues in percentages. Out of the total respondents and out of those who had worked or who were still at work at the time of the study, 58% admitted that their colleagues and employers knew about their HIV+ status. Similarly, 58% and 57% of these PLHIV were from Lagos Mainland and Epe LGA respectively. This indicates that there is no difference between the proportions of PLHIV from the rural setting, Epe LGA and those from the urban setting, Lagos Mainland LGA who affirmed so.

Figure 1. Whether the employers and colleagues knew about the respondents' HIV+ status



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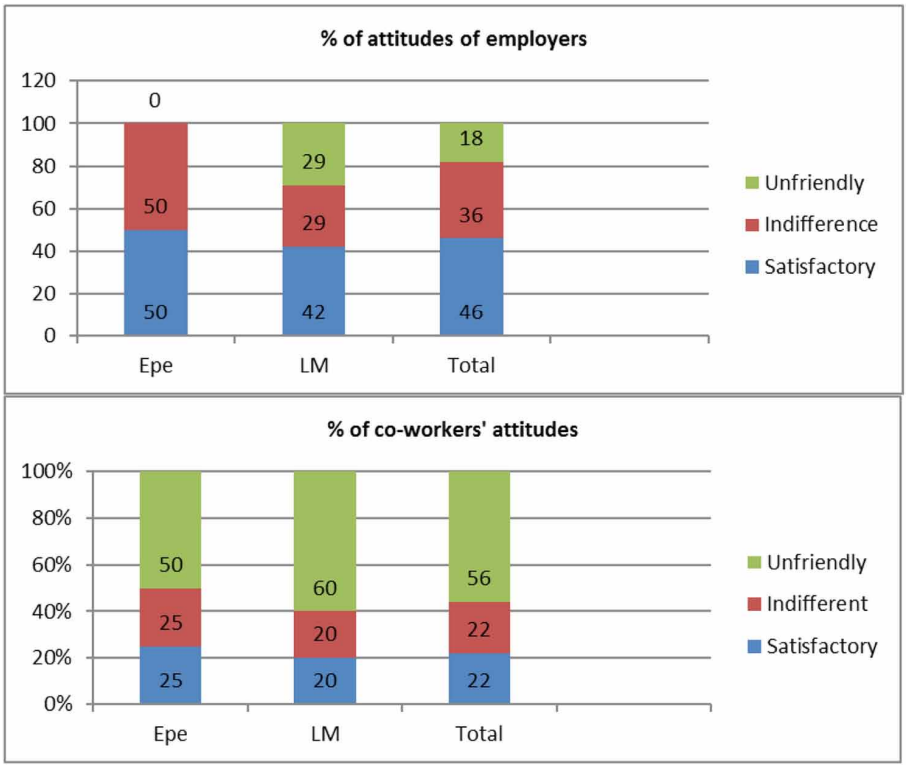
Column charts in Figure 2 present attitudes of employers and colleagues towards PLHIV after they (the employers and colleagues) got to know that their employees and colleagues were living with HIV respectively. About 18% of the total respondents who were involved in this analysis found their employers' attitudes unfriendly after knowing their HIV positive status. Only Lagos Mainland LGA respondents (29%) constitute this proportion. On the other hand, 36% of the respondents said their employers' attitudes were indifferent or neutral after they had learnt of their HIV positive status. More Epe respondents (50%) than Lagos Mainland ones (29%) were in this category. Meanwhile, more than two-fifths of the total respondents reported that their employers' attitudes towards them were satisfactory. Among these are one half of Epe and more than two-fifths of Lagos Mainland respondents.

For colleagues, more than one half of the total PLHIV respondents reported that their colleagues' attitudes were unfriendly. It could be said that respondents' co-workers were more unfriendly than their employers because only 18% of the respondents reported that their employers were unfriendly compared with 56% of the respondents who said that their co-workers were unfriendly. About three-fifths of Lagos Mainland respondents reported that their colleagues were unfriendly while one-half of Epe respondents were so classified. More than one fifth of the respondents indicated that their colleagues' attitudes were indifferent. Similarly, the same proportion reported that their colleagues' attitudes towards them were satisfactory. Similar patterns of reporting were observed in both LGAs. One-quarter of Epe respondents reported that their co-workers were indifferent, and another one-quarter said their co-workers' attitudes were satisfactory. With respect to Lagos Mainland LGA, one-fifth of the respondents were satisfied with their colleagues' attitudes while another one-fifth said their colleagues' attitudes towards them were indifferent or neutral. The differences are not significant.

Figure 2. Attitudes of employers and co-workers



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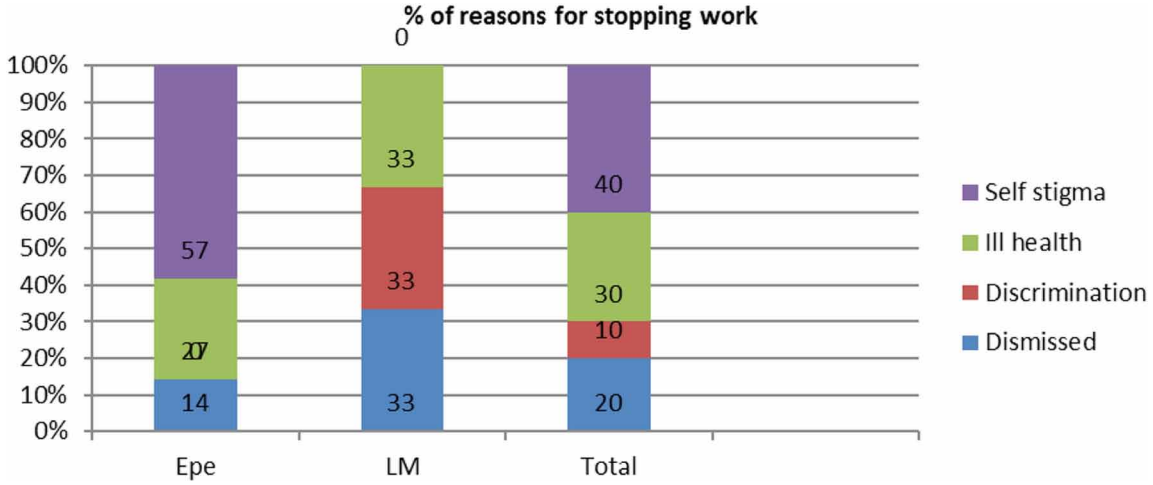
The column chart in Figure 3 presents the distributions (in percentages) of reasons why some PLHIV engaged in paid employment had stopped working. About 13% of the respondents admitted that they had stopped working. Among this percentage, 20% were dismissed instantly as their sero-positive status became known to the employers. This proportion is made up of 33% of Lagos Mainland and 14% of Epe respondents. One in ten PLHIV resigned because of stigma or discrimination and this is represented by one-third of Lagos Mainland respondents only and none of the Epe PLHIV was involved in this. It could be said that urban PLHIV suffered more than the rural ones in this respect. Ill health was responsible for about 30% of the total respondents in stopping work. Again, higher proportion of Lagos Mainland respondents (33%) than the proportion of Epe respondents (27%) stopped work due to ill health. Many respondents (40%) stopped work because of self-imposed discrimination and this comprises only Epe respondents (57%).

The PLHIV respondents who were self-employed were also considered. The traders among them were asked if people were still buying goods from them. The results showed that 28% of those who were traders complained that people had stopped patronizing them because of the HIV positive status. Among these PLHIV, 50% of Epe against 10% of Lagos Mainland respondents reported this. It implies that these PLHIV have lost their sources of income. Epe respondents who are traders are therefore, more likely than Lagos Mainland respondents to be avoided by people. This could be explained by the fact that many Epe respondents were self-employed.

Figure 3. Reasons for stopping work



Other forms of discrimination investigated in the workplace include deployment to other units, mandatory HIV testing, prohibition of sharing toilets with other colleagues, denial of promotion and participation in the insurance scheme.

Column chart in Figure 4 presents data on if the PLHIV were deployed to other departments or units based on their sero-positive status. One-third of the total respondents reported that they had been deployed to other departments or units. Among them are 43% of Lagos Mainland respondents and 20% of Epe respondents. In this case, a higher proportion of Lagos Mainland respondents than Epe respondents

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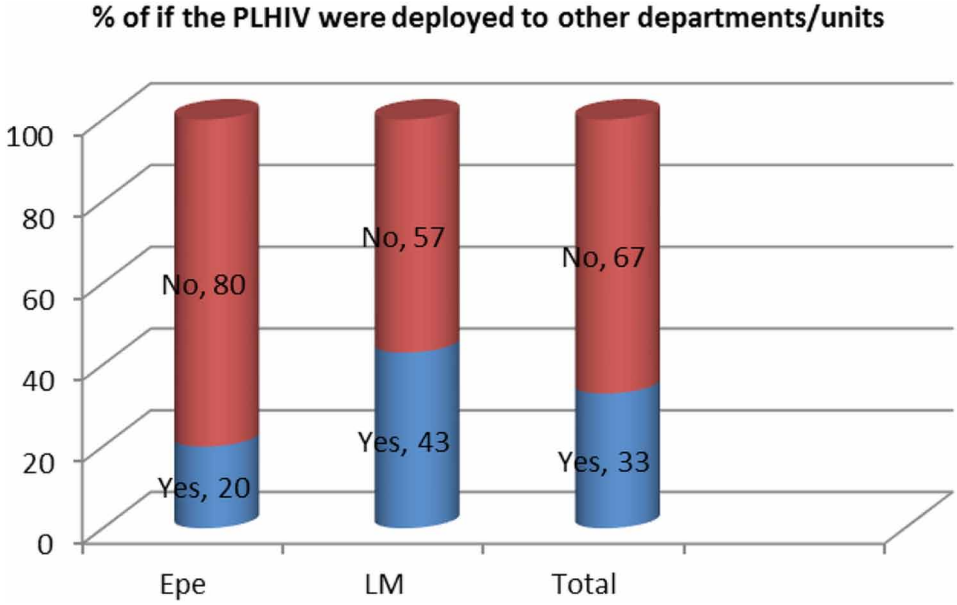
Figure 4. Deployment of PLHIV respondents to other departments or units



were affected. Therefore, Lagos Mainland respondents are more likely than Epe ones to experience this form of discrimination (segregation) in the workplace.

Before the respondents could be assessed to know whether they were forced to do the HIV tests or not, it was necessary to explore how they got to know that they were HIV positive. Earlier studies have suggested that the circumstances of diagnosis of PLHIV's infection entail some forms of social discrimination (Iwuagwu 2001; 2003; cited in Nwanna, 2011). In view of this, the study examined how the HIV status of the respondents was diagnosed. The PLHIV were asked to describe what circumstances led to their diagnoses. Almost two thirds of the total PLHIV respondents said they became aware of their status after they became ill and underwent blood tests in hospitals. Around 66% of Lagos Mainland and 60% of Epe respondents constitute this proportion. Only about 18% found out through voluntary HIV testing representing 17% and 14% of Epe and Lagos Mainland respectively. Six women out of 50 female PLWHA surveyed representing only 8% of the total PLWHA respondents and 12% of the female respondents; were diagnosed during antenatal care. Seven respondents (8%) were diagnosed HIV positive at pre - employment and pre -admission tests.

The column chart in Figure 5 presents percentage distribution of PLHIV respondents who were mandated to have HIV tests by the employers. About 27% of the total PLHIV had been forced by their employers to do the HIV tests. Among these are 50% of Epe and 11% of Lagos Mainland respondents. Therefore, it could be said that more Epe respondents than Lagos Mainland respondents were affected by this form of discrimination (mandatory HIV tests) in the workplace.

The column chart in Figure 6 presents the percentage distribution of PLHIV who were denied the use of same toilets with other colleagues. All the respondents who were involved in this analysis enjoyed sports facilities in their offices but 15% of the total PLHIV respondents were not allowed to share the same toilets with their co-workers. More of Epe respondents (17%) than Lagos Mainland respondents (14%) were prohibited from using the same toilets with others.

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Figure 5. PLHIV respondents who had been mandated to HIV tests

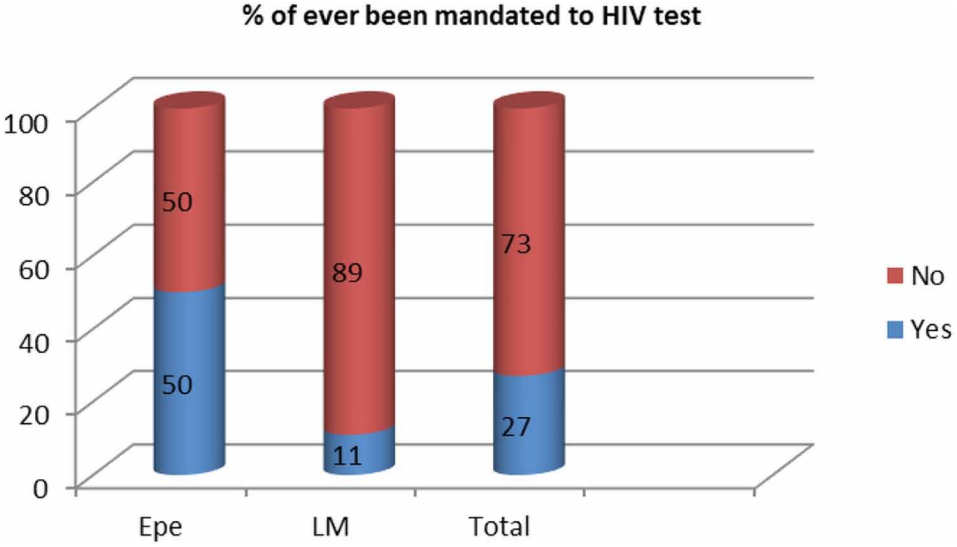
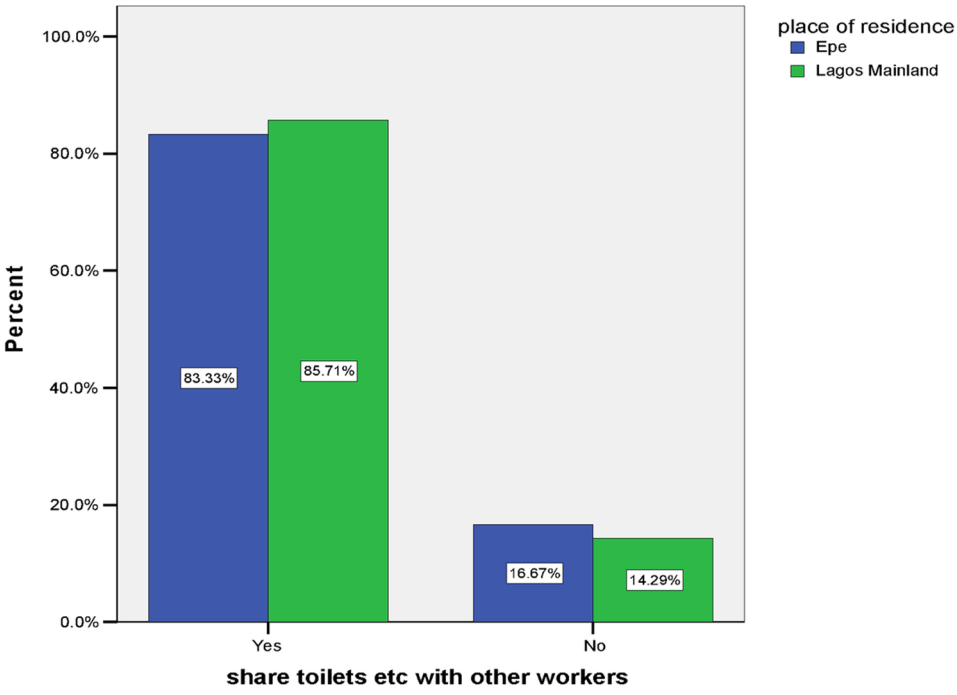


Figure 6. Share toilets with other workers



The chart in Figure 7 presents the percentage distribution of denying the PLHIV respondents promotion in the work place. About 18% of them reported being denied promotion on the basis of their sero-positive status. Only Lagos Mainland respondents (29%) were affected. Epe respondents were not affected.

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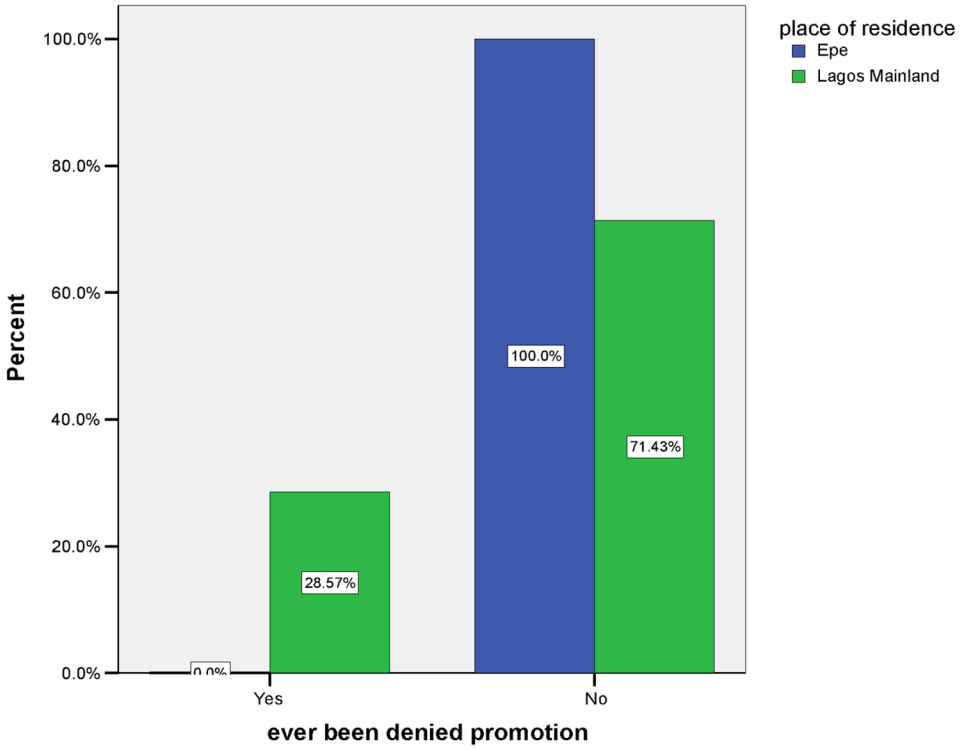
Figure 7. Ever been denied promotion



The respondents were asked to state if their offices were operating health insurance schemes. Among those PLHIV respondents who had worked or were working at the time of the study, 43% of them confirmed that they had health insurance schemes in their organizations. About three-fifths of the Epe respondents admitted that their organizations operated health insurance schemes against one-third of the Lagos Mainland respondents. The chart in Figure 8 presents the percentages of PLHIV who were or were not allowed to participate in insurance scheme. Although 43% of the PLHIV admitted having health insurance schemes in their offices, only 50% of this proportion were allowed to participate in the scheme. Among those who were not allowed to participate in the health insurance schemes, majority (67%) came from Lagos Mainland LGA compared to 33% of them that came from Epe LGA. More Lagos Mainland LGA respondents than Epe respondents were denied benefiting from health insurance scheme. One of the PLHIV who were provided with the health insurance cover said she was already benefiting from the scheme before her diagnosis. She therefore reiterated: "It is for all staff, irrespective of your sero-positive status. I was already benefiting from it before I was infected with the virus".

From the above findings, the forms of HIV-related discrimination in the workplace include mandatory HIV tests, exclusion from toilet facilities, isolation, denial of promotion and participation in the insurance scheme.

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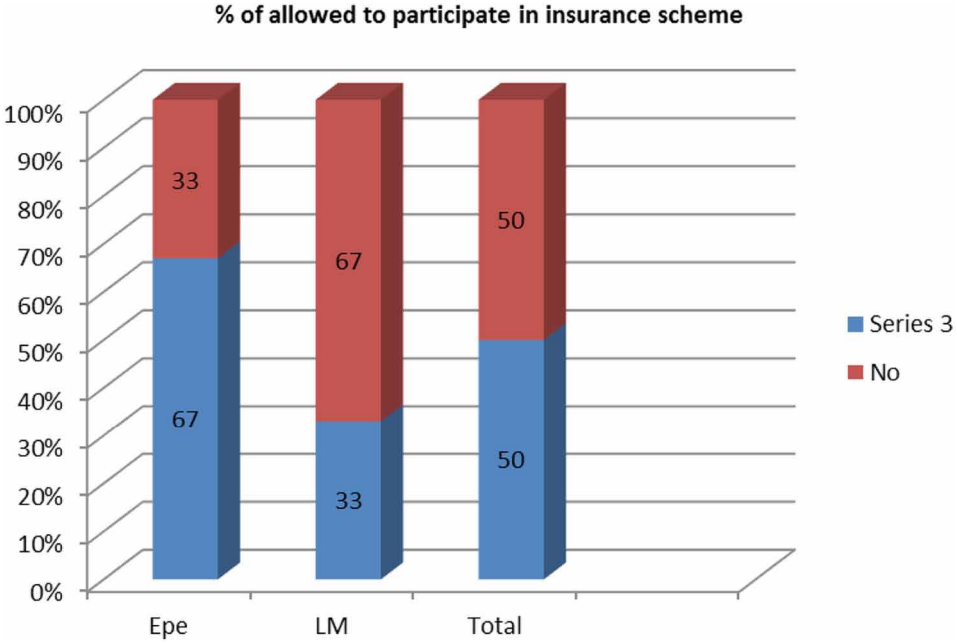
Figure 8. Allowed to participate in insurance scheme



Discussion and Implications of Findings

The study revealed that more than half of the total respondents were employed and many were self-employed while the rest were in paid employment. Majority of Epe respondents were self-employed while Lagos Mainland respondents were more than Epe respondents among those in paid employment. This is probably due to the fact that Lagos Mainland respondents had higher educational level than Epe respondents. Similarly, Lagos Mainland respondents earned higher income than Epe respondents.

The results also showed that more than a half of the total respondents admitted that their colleagues and employers were aware of their sero-positive status with almost equal proportions of Lagos Mainland and Epe LGA respondents saying so. With this awareness, the study was able to assess the attitudes of the employers and co-workers towards the PLHIV. The findings revealed that almost one fifth of the employers were unfriendly towards the PLHIV and that these employers were from Lagos Mainland LGA respondents (29%) constitute this proportion. The probable explanation of this is that Lagos Mainland respondents are more likely to engaged in paid employment that those from Epe. Their employment status discussed under the respondents' profile indicated that many of the Epe respondents were self-employed and the few involved in the study might not have experienced this. The study further revealed that their colleagues' attitudes were also unfriendly. It was demonstrated that their co-workers were more unfriendly than their employers. This might be due to the closeness of co-workers to the PLHIV. A higher percentage of Lagos Mainland respondents than Epe respondents reported that their colleagues were unfriendly. This could be explained by urban factor. In urban centres individualism predominates and therefore people care less about other people while in rural settings relationships are more enveloping. These findings corroborate with that done by UNAIDS (2011) which revealed that colleagues and clients were not likely to be supportive or more likely to change their behaviours.

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The results indicated that some PLHIV lost their jobs or sources of income as those who were engaged in paid employment stopped working and the self-employed PLHIV lost patronage from people respectively. It was revealed that more Epe respondents than Lagos Mainland ones lost their sources of income. This could be explained by the fact that many Epe respondents were self-employed and were traders and so were more likely to be avoided by people who knew their HIV status. Some PLHIV were dismissed instantly as soon as their employers got to know that they were living with HIV. This study confirms earlier studies by Adirieje (2003 cited in Nwanna, 2011) and Iwuagwu et al. (2003 cited in Nwanna, 2011). These studies found that some PLHIV were instantly dismissed when their sero-positive status became known to the employers. This type of treatment towards the PLHIV undermines HIV prevention and care and violates the human rights of the PLHIV.

Another reason for stopping work found in this study is stigma or discrimination. It was revealed that only Lagos Mainland respondents stopped work because of discrimination. While more urban PLHIV than the rural ones stopped work due to discrimination from other people, more rural PLHIV than urban ones stopped work because of self-imposed discrimination. In rural areas, primary relationships predominate where most people are familiar with one another. Therefore, the PLHIV would prefer to avert discrimination by stopping work. Contrary to rural relationships, urban relationships are secondary and individualistic and therefore, the PLHIV suffered more of discrimination in the work place. Another reason for stopping work is ill health. Ill health was responsible for about 30% of the total respondents in stopping work.

All these findings corroborate the results of earlier studies by UNAIDS (2011), The Global Network of People Living with HIV (GNP+), ILO, The PLHIV Stigma Index (2012) and ML dos Santos et al. (2014).

Other forms of discrimination found in this research include deployment to other units, mandatory HIV testing, prohibition of sharing toilets with other colleagues, denial of promotion and participation in the insurance scheme.

They research indicated that Lagos Mainland respondents are more likely to be deployed to other departments or units based on their sero-positive status. The finding validated the study of the Global Network of People Living with HIV (GNP+), ILO, The PLHIV Stigma Index (2012). Dismissing and deploying PLHIV to other departments or units indicate that the employers and colleagues lack full knowledge of HIV infection. Perhaps, they thought or perceived that HIV could be contracted through casual contact.

The study found that six women out of 50 female PLWHA surveyed representing only 8% of the total PLWHA respondents and 12% of the female respondents were diagnosed during antenatal care. This finding challenges the reliability of the sentinel data. The National HIV Sentinel Surveys of pregnant women visiting public antenatal clinics/hospitals provide data that are used as a representation for the general population. Therefore, the national prevalence rate may be grossly underestimated. The implication is that the Sentinel data do not accurately reflect the HIV pandemic in Nigeria.

Furthermore, seven respondents were diagnosed HIV positive at pre - employment and pre -admission tests. It is important to note that these two circumstances are among the various forms of social discrimination particularly when informed consent is not obtained. If seven out of 80 PLWHA respondents reported having gone for medical examinations for either employment or admission into schools, it is equivalent to 28,000 persons in about 3 million PLWHA in Nigeria. This is quite high.

Mandatory HIV test is another discriminatory attitude of the employers towards the PLHIV employees. It was revealed that more of Epe than of Lagos Mainland respondents were mandated to have HIV tests.

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The findings indicated that PLHIV were excluded from the use of same toilets with other co-workers. It was revealed that Epe respondents were more likely than Lagos Mainland ones to be barred from sharing the same toilets with the other colleagues.

The study also showed that some PLHIV respondents were denied promotion due to their sero-positive status and this affected only the Lagos Mainland respondents. Once again, Lagos Mainland respondents are seen to be more likely to be discriminated against in the work place.

Also discovered was a significant proportion of PLHIV was not permitted to participate in health insurance scheme in their offices. One plausible reason for this is that insurance companies generally regard PLHIV as high risk insured (regarding cover) for them because it is deemed that the HIV-infection significantly increases the risk of early liability which does not augur well for their businesses which can only be mediated by increased premium payment to be borne by the prospective insured. A greater proportion of Lagos Mainland PLHIV than Epe respondents were denied participation in the health insurance scheme.

All these results demonstrate the different forms of discrimination PLHIV suffer in the workplace. The implication is that the human rights of the PLHIV are violated.

These negative attitudes of employers and co-workers towards the PLHIV could be explained with SIT. All these forms of discrimination were perpetrated by employers and co-worker because they perceived themselves as members of an in-group PLHIV as members of an out-group. The employers and colleagues of PLHIV identify, categorise and compare themselves against the PLHIV and with that perspective; they exclude and discriminate against PLHIV.

SOLUTIONS AND RECOMMENDATIONS

Identifying that using pregnant women as proxy in sentinel surveys underscores the problem of measuring HIV prevalence in Nigeria and would inform the policy decision to expand the scope of sentinel surveys. The Government should re-strategize the mode of data collection in order to include other subpopulations such as males, non-pregnant females and high-risk groups and to provide a more accurate measure of HIV prevalence in Nigeria

The rural- urban dichotomy, which shows that urban PLHIV are more likely to suffer discrimination in the work place would influence policy decisions on how to design culturally acceptable programmes that will help sensitize and enlighten the urban populace on the HIV pandemic and also protect the rights of rural PLWHA.

The identification of the different forms of discrimination should inform the policy decisions on issues related to discrimination within the workplace that should help in designing programmes that will elicit support for organisations where these PLHIV work to better handle them.

This is followed by a government's anti-discrimination policy supported by a law that will ensure the protection of the rights of PLHIV.

Identifying that using pregnant women as proxy in sentinel surveys underscores the problem of measuring HIV prevalence in Nigeria and would inform the policy decision to expand the scope of sentinel surveys. The Government should re-strategize the mode of data collection in order to include other subpopulations such as males, non-pregnant females and high-risk groups and to provide a more accurate measure of HIV prevalence in Nigeria.

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Recommendations

Based on the findings the following are recommended:

- There is need to empower PLHIV through life-skill training, counselling, and education so that they can litigate when faced with discrimination.
- The PLHIV should speak out and be open about their status particularly the healthy-looking ones amongst them to demystify and dispel misinformation and generate empathy which will reduce the level of discrimination. More PLHIV should be trained extensively and engaged in public education as educators and advocates. They should also be involved as HIV policy makers at every level of decision making and engaged in equal partnerships with policy-makers.
- PLHIV who are already active in their communities should be encouraged because it will not only empower other volunteers by restoring dignity and status, but would also give a face to the epidemic and thus facilitate greater involvement of people living with HIV/AIDS.

There is need for employers to adopt and implement appropriate workplace policies.

HIV/AIDS voluntary counselling, testing and prevention/treatment services should be provided as part of regular health facilities.

Organizations should adopt legislations to prohibit mandatory-HIV testing.

- Formulate labour laws that will make organizations responsive to the challenges of HIV/AIDS and effectively guarantee to PLWHA the right to work, protection against unfair dismissal and other employment-related rights.
- Organisations should enforce the anti-discriminatory policies formulated by Lagos State and Federal governments.

FUTURE RESEARCH DIRECTIONS

This research indicates that PLHIV suffer different forms of discrimination in the work place. It will stimulate further studies in this area because it only provides the levels of the different types of discrimination. Future researches in this area should consider increasing the sample size, perhaps study different localities, and test hypotheses that may find out the categories of PLHIV who suffer these forms of discrimination since not all PLHIV are discriminated against.

CONCLUSION

This chapter investigated the people living with HIV in two local government areas of Lagos State, Nigeria, to assess the different forms of discrimination. It considered various studies done in this area and found that very few empirical researches were carried out in this area therefore this study set out to fill this gap. Secondly, it was revealed that discrimination was major factor of loss of employment or loss of sources of income, denial of promotion, change of attitudes towards PLHIV and exclusion from social activities in the work place. The chapter was premised on social identity theory of Tajfel (1982). The

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theory was able to explain why employers and colleagues of PLHIV could discriminate against PLHIV. Using structured questionnaires, data were collected from a purposive sample of 80 PLHIV from the two LGAs – Epe and Lagos Mainland. The results showed that the forms of HIV-related discrimination experienced by the PLWHA were instant dismissal from offices, mandatory HIV tests, alienation and exclusion from insurance scheme. The implication is that most organizations have not yet formulated HIV policy in their offices and thus do not care for their infected employees.

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KEY TERMS AND DEFINITIONS

Employment Loss: A major consequence of discrimination in the workplace.

Epe General Hospital: A secondary level hospital in Epe local government area. The hospital has a screening center for HIV. Once a person's blood tests positive for HIV, the individual is referred to Nigeria Institute of Medical Research, Lagos Mainland LGA, Lagos.

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Epe Local Government Area (LGA): A rural riverine area as at 2005 but is now considered an urban setting. It has a high HIV prevalence rate, which was 6.9% in 1999 but has declined to 2.7% in 2010.

Lagos Mainland Local Government Area (LGA): An urban setting located at the metropolis of Lagos State. It harbors areas that drive HIV infection. The HIV prevalence rate is not known.

Nigeria Institute of Medical Research: One of the popular centers for the National Anti-Retroviral Therapy (ART) Programme in Nigeria. The institute assisted in identifying PLHIV.

Sero-Positive Status: A state of being infected by Human Immunodeficiency Virus (HIV).

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APPENDIX

Table 1. Profile of PLHIV respondents by place of residence

Characteristics	Epe		Lagos Mainland		Total	
Age	**N=30**	**%**	**N=50**	**%**	**N=80**	**%**
1. 18 – 19	2	2.6	0	0.0	2	2.6
2. 20 – 29	3	10.3	13	26.5	16	20.5
3. 30 – 39	14	48.3	20	40.8	34	43.6
4. 40 – 49	10	34.5	12	24.5	22	28.2
5. 50 and above	0	0.0	4	8.1	4	5.1
No response	1	1.3	1	2.0	2	2.0
X^2=8.951; df=4; p>0.05						
Marital status						
1. Never married	9	30.0	17	34.0	26	32.5
2. Married	7	23.3	25	50.0	32	40.0
3. Divorced/separated/widowed	14	46.6	8	16.0	22	27.5
X^2=9.838; df=2; p<0.05						
Level of education						
0 None	2	6.7	0	0.0	2	2.5
1 Primary	9	30.0	5	10.0	14	17.5
2 Secondary	11	36.6	24	48.0	35	43.8
3 Tertiary	8	26.7	21	42.0	29	36.3
X^2=9.386; df=3; p<0.05						
Employment status						
1 Unemployed	13	43.3	21	42.0	34	42.4
2 Self- employed	14	46.7	19	38.0	33	41.3
3 Paid employment	3	10.0	10	20.0	13	16.3
X^2=1.503; df=2; p>0.05						
Monthly income						
1 No income	13	43.3	22	44.0	35	42.4
2 Less than 10,000	11	36.7	8	16.0	19	23.8
3 N10,001 – 20,000	1	3.3	6	12.0	7	8.8
4 N20,001 and above	2	6.7	7	14.0	9	11.3
No response	3	10.0	7	14.0	10	13.3
X^2=5.782; df=3; p>0.05						

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Chapter 65
Working With Lesbian, Gay, Bisexual, and Transgender People in Care Relationships

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ABSTRACT

This chapter details some key considerations for health and human services professionals working with lesbian, gay, bisexual, and transgender (LGBT) people in care relationships. Reflecting on the impacts of stigma and discrimination as well as the social, cultural, and political contexts of LGBT communities and carers, this chapter will explore some of ways these factors (as well as heterosexist and cis-genderist assumptions about families and partners) impact the identification, support, and recognition of LGBT people in care relationships. Finally, this chapter will recommend strategies to reduce poor mental health and wellbeing outcomes among people in care relationships where one or all people involved are LGBT, and explore some key actions that may assist health and human services better support and include LGBT people in care relationships.

INTRODUCTION

Research on the physical and mental health of lesbian, gay, bisexual and transgender (LGBT) populations has identified that LGBT people face unique hardships and obstacles to wellbeing. These can include experiences of physical and mental abuse, persecution or economic disadvantage, and can occur within a range of public life domains such as employment, education, criminal-justice law and relationship recognition. These hardships can be directly linked to negative discriminatory societal responses to diversity of sexual orientation, gender identity or expression and include exclusion or discrimination in personal spheres, such as within significant interpersonal relationships (Rosenstraich, 2013; Moleiro & Pinto, 2015).

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For LGBT people in care relationships, intersections might arise between these hardships and the experience of providing or receiving informal support to or from another person. This can result from direct stressors, dynamics of the care relationship itself, or circumstances arising within a person's family or community, economic or socio-political context.

This chapter specifically refers to two sub-cohorts of "carers". One cohort is L, G, B, and/or T people who support a person/s with a chronic illness, disability, mental illness, substance abuse issues or who have aged-related needs. The other sub-cohort are non-LGBT people who care for L, G, B and/or T person/s who (due to one of these same circumstances) require support. Other terms include "people in care relationships" and "LGBT people in care relationships", these refer to carers as above, but also to LGBT people receiving care.

BACKGROUND

Access to Health and Human Services

Literature on LGBT people's use of health and human services acknowledges the impact of stigma attached to non-heterosexual orientations and transgender identities is often a determining feature of the difficulties people experience in accessing them (Johnson, Mimiaga & Bradford, 2008). Emergent research on the experiences of LGBT people seeking or using health and human services (inclusive of carer supports) has recognised a variety of potential barriers to, and gaps in, appropriate service provision as well as fear of self-disclosure among LGBT service users (Albuquerque, de Lima Garcia, da Silva Quirino, Alves, Belém, dos Santos Figueiredo,... & de Abreu, 2016; Coon, 2007).

Many services designed for community and individual wellbeing, safety or capacity building (such as housing, policing, justice, legal, education and employment services) are perceived as unreliable or untrustworthy by LGBT people. LGBT populations have reported inequitable assistance and discriminatory practices in these sectors and highlighted many providers are simply inappropriate or ill-prepared to meet LGBT client needs (Aldridge & Somerville, 2014; Campo & Taylor, 2015; Rossman, Salamanca & Macapagal, 2017).

Circumstances surrounding LGBT communities suggest the need for tailored health and human services, which target the unique challenges and risks they face (Burwick, Gates, Baumgartner & Friend, 2014; Coon, 2007). LGBT people experience sizeable disparities in health and wellbeing outcomes compared to non-LGBT people. Among these are poorer mental health, greater suicide and self-harm risk, increased risks to sexual health, chronic illness, high rates of substance misuse as well as a higher likelihood of being a victim to bullying, violence and harassment (McKay, 2011; Scott, Pringle & Lumsdaine, 2004; Whitehead, Shaver & Stephensen, 2015).

Experiences of discrimination, stigma and harassment on the basis of sexual orientation and gender identity is recognised as a key determinant of health and connected to poorer mental health outcomes among LGBT people (Rutherford, McIntyre, Daley & Ross, 2012). Research on LGBT mental health has identified links between discrimination and levels of depression, suicidal ideation and anxiety (Rosenstreich, 2013; Leonard, Pitts, Mitchell, Lyons, Smith, Patel,... & Barrett, 2012).

Furthermore, while research on comparative health risks and outcomes between the distinct subgroups under the LGBT umbrella remains innovative, significant disparities and differences between each cohort

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are noted in available data (LGBTI Health Alliance, 2016; Whitehead, Shaver, & Stephenson, 2016). Where there is overlap between cohorts, for example gay transgender men, these risks may be magnified.

Wellbeing of Carers

LGBT people in care relationships are subject to these and other health disparities. Research on the health and wellbeing of carers (and former carers) has identified higher rates of psychological distress and self-reported poorer physical health than people who do not provide care (Schofield, Bloch, Herman, Murphy, Nankervis, & Singh, 1998).

Negative outcomes are not only due to caring, but also attributed to indirect, secondary stressors: a lack of support outside the care relationship and daily life concerns such as poor health, can both impact carers lives (Stalker, 2003). However, it is important to note carers are regularly exposed to stressors and distressing events at a significantly high rate, which increase the risk of common mental disorders (Stansfeld, Smuk, Onwumere, Clark, Pike, McManus, ... & Bebbington, 2014) as well as physical injury (Brown & Mully, 1997; Tong, Haig, Nelson, Yamakawa, Kandala, & Shin, 2003) and illness (Schofield, Bloch, Herman, Murphy, Nankervis, & Singh, 1998).

Indirect impacts on carers (such as limited time, stretched resources or insufficient energy to achieve desired goals in priority life areas) may negatively impact their social life, increase isolation, or create clashes between care relationships and employment. This can subsequently impact intimate partnerships and other family or friend relationships (Oyebode, 2003). Such indirect impacts are an important consideration for policymakers and service providers aiming to mediate health and psychological strains on carers (Stansfeld, Smuk, Onwumere, Clark, Pike, McManus, ... & Bebbington, 2014).

Amplified disadvantage can occur among LGBT carers, where direct or indirect stressors related to care responsibilities combine with anxieties due to L, G, B and/or T discrimination. The experience of real or perceived discrimination can also influence a person's wellbeing. Anxieties regarding the cultural safety of a service provider can be a barrier to using carer or related services, which may otherwise sustain the quality of their relationships. For example, an LGBT carer who is concerned about reactions towards them at a carer support group may choose not to access this form of support, which is known to otherwise alleviate social isolation for others who feel welcome. Also, LGBT people supported in care relationships may experience barriers to accessing services and community due to stigma or discrimination experienced as an LGBT person, as well as due to a disability, mental or chronic illness or their age-related care needs.

Inclusion Criteria

Finally, in some literature, 'LGBTI' is used in an effort to include intersex people and recognise their contributions to LGBT communities. References to L, G, B and T people in this chapter are made with acknowledgment some LGBT people are intersex. However, not all intersex people are LGBT (OII Australia, 2012). Therefore, 'LGBTI' is considered insufficient and inappropriate to refer to intersex experiences here.

While there is overlap with LGBT experiences for some intersex people, major differences between intersex, sexuality and transgender issues remain. These include the nature of acts of violence and discrimination used against intersex people, such as non-consensual medical surgeries. Additionally, there are differences between sexual and gender identity issues and those related to intersex body experiences

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(Androgen Insensitivity Support Syndrome Support Group Australia (AISSGA), Intersex Trust Aotearoa New Zealand (ITANZ) Organisation Intersex International Australia (OIIAU), Black E., Bond K., (AISSGA), Briffa, T., (OIIAU/AISSGA), Carpenter M., (OIIAU/Intersex Day Project, Cody C., (OIIAU), David, A., (OIIAU)… BEECHAC, Yovanovic, 2017, pp. 2-4). Conflation of intersex and LGBT issues is problematic in the context of health and discrimination experiences. Therefore, 'intersex' is excluded from the acronym throughout this chapter except where the literature referenced includes it. Inappropriate inclusion of 'intersex' in 'LGBTI' frames illustrates while the acronym may seem convenient, it is not inevitably matched by shared experiences among the communities it refers to.

Interaction Between Carers and Services

Fredriksen-Goldsen and Hooyman (2007) note that although studies identify poor physical and mental health outcomes among carers, there is less exploration on whether or how health or human services can address them, particularly in relation to traditionally marginalised groups. It has also been identified that primary and frequent carers can experience lower life satisfaction than people who care less often (Borg & Hallberg, 2006).

Despite this, health, welfare and government services are often inadequate to address these issues and people with care responsibilities risk not having their needs or concerns addressed alongside those they support. Literature on care relationships cite carers and caring family members who felt overlooked, inadequately informed by professionals (Theed, Eccles & Simpson, 2017), excluded from care teams and care planning, and who had their skills or knowledge downplayed (Williams, 2007; 2012).

An online survey conducted in 2017 questioned 3,516 unpaid carers aged 18-75 across Australia, France, Germany, Italy, Spain, the UK and the US. It found 28 per cent of carer respondents felt their role was unrecognized by their healthcare system, and approximately 43 per cent of surveyed carers living in suburban areas did not feel supported at all by social/welfare services. This survey also found 54 per cent of respondents did not have time to book or attend their own medical appointments, while about 42 per cent put the health of the person they are caring for above their own (Embracing Carers, 2017).

In addition, literature on carers identifies that care relationships can be hidden within a range of contexts, while particular cohorts of carers are even less likely to be identified (Knowles, Combs, Kirk, Griffiths, Patel, & Sanders, 2016). Carer isolation may also increase in countries and contexts where client centered or consumer directed models of care and self-management approaches for people are increasing (Knowles, Combs, Kirk, Griffiths, Patel, & Sanders, 2016; Ottmann, Laragy & Haddon, 2009). If gaps for carer inclusion are not addressed within these service approaches, a risk of damage to the quality of care relationships and new stresses within them remain (Ottmann, Laragy, & Haddon, 2009).

Likewise, ambiguity of relationships between formal service providers and carers has been well documented. Twigg and Atkin (as cited in Rogers & Barnes, 2003, p. 121) identified four policy and service provider approaches to carers, which describe how carers fall either within or beyond health and human services system concerns or responses:

1. The first was *carers as a resource*. This model primarily saw carers as a broad spectrum of people with no distinction between friends, neighbours or primary carers, who could provide support to a service user. These carers are viewed to function in the background to formal service provision and only considered when they are struggling;

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2. The second is *carers as co-workers,* where carers are seen as working with formal service providers who may negotiate with carers to delineate between informal and formal care. While the main focus of this model is still the client, carers are considered more central than in the resource model. Despite conflicts of interest being recognised in the 'co-worker' model, these are usually dismissed in the belief carers want to perform the role. Enabling this is seen as the best way for services to build a relationship with the carer;
3. The third model is the *carers as a co-client*, which concentrates on people who are primary carers with considerable responsibilities. It includes the likelihood of co-existing carer needs, which may need to be met alongside a client. This approach recognises carer needs may conflict with those of the service user's, and that prioritising of need can ignite tensions which need consideration;
4. Finally, there is the *superseded carers* model, which frequently guides service provider interactions with carers supporting people with intellectual disabilities, physical disabilities or mental ill health. Service providers do not sustain care relationships in this instance but rather attempt to remove the need for them. This is done by focussing on the service user and increasing their independence or through interventions, which aim to reduce or remove dependence on a carer.

Throughout this chapter, readers are encouraged to consider how bias towards particular family structures, or discrimination against particular service users, may influence work with LGBT people in care relationships. Readers should seek to identify circumstances where carers might be vulnerable to being considered a resource, a co-worker, a co- client or superseded, or where attitudes to LGBT people receiving care may influence how staff respond to the care relationship and caregiver.

Forms of Discrimination and Stigma Towards LGBT People

Barriers to services, discriminatory treatment and unsuitable supports jeopardize the wellbeing of LGBT people and accrue substantial human and economic cost (Banks 2003). The high societal and economic value of care relationships, combined with their regularity across society (CANCA, 2017), underlies the importance of both mainstream and targeted LGBT services being capable to respond to them appropriately.

A key to providing useful responses to LGBT client or carer needs is recognising homophobia, heterosexism, bi-phobia, transphobia and their impacts. Homophobia typically refers to fears and hatred of lesbians or gay men based on their desires and sexual practices, which can lead to discriminatory behaviour, physical violence or verbal abuse (Leonard, Marshall, Hillier, Mitchell & Ward, 2010).

Heterosexism is related to homophobia insomuch as it refers to assumptions and beliefs that all people are, or at least should be, heterosexual (Leonard, 2002). Heterosexist perspectives perpetuate discrimination against LGBT people through implication that non-heterosexual sexualities are harmful, abnormal and a risk to societal wellbeing (Leonard, 2002; Rosenstreich, 2013; Smith & Ingran, 2004). However, heterosexism is not expressed only by direct hatred for LGBT people, but also through unconscious or deliberate omission of LGBT needs and perspectives. Regardless of its presentation, heterosexism results in heterosexual behaviors, identity or norms, being privileged over those of sexual minorities who are consequently discredited.

For LGBT people in care relationships heterosexist views and assumptions about family, intimate partnerships, parenting and communities among health and human services staff are an additional hurdle (Willis, Ward & Fish, 2011). Heterosexist (and cis-sexist) assumptions by service staff can reduce

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awareness and identification of LGBT service users and their care relationships (Willis, Ward, & Fish, 2011). This can obscure LGBT status, inhibit self-expression and client help seeking around particular needs (Irwin, 2007).

Homophobia can also extend to bisexuals who are in same gender relationships and may be experienced alongside bi-phobia. Bi-phobia is similarly based on an aversion to sexual desires or practices; however, fear and hatred of bisexual people can also result from mono-sexist beliefs. In other words, the view that only 'single-gender sexual orientations' (heterosexuality and homosexuality) are legitimate (Ross, Dobinson & Eady 2010, p. 496). Mono-sexist views are not limited to heterosexual populations and can be held by gay or lesbian people, thus impacting the safety and inclusion of bisexual people in gay, or shared "LGBT" environments (McLean, 2008).

Likewise, transphobia is defined as an irrational hatred towards individuals who do not conform to societal gender expectations. Enabled by cultural ideologies of heterosexist views of masculine and feminine expression (Rosenstreich, 2013), transphobic views reinforce gender non-conformity between sex and gender as an objectionable characteristic. Transphobia correlates with cis-genderism, which refers to the view conformity between assigned sex at birth and gender identity is normal or natural; or alternatively the view that people whose gender identity is incongruent with the sex they were assigned at birth are odd or threatening (Leonard, Lyons, & Bariola, 2015, cited in Blumer, Ansara & Watson, 2013; Preciado, 2013).

As the focus of transphobia is on gender identity and expression, transgender people of any sexual orientation are vulnerable to experiencing it. Similar to biphobia, it is not only heterosexual people who may be transphobic. Literature on transgender and gender diverse experiences identifies transphobia and cis-genderist interactions among lesbians, gays, and bisexuals (Nadal, Whitman, Davis, Erazo & Davidoff, 2016, p. 499; Cashore & Tuason, 2008, pp. 388–390).

MULTIPLE MARGINALITIES AND INTERSECTION OF LIVED EXPERIENCES

Terminology and Identity

LGBT communities are overlapping, yet separate groups whose experiences of sexual orientation, gender expression and identity are shaped by a range of intersectional lived experiences. It is essential service providers understand how discrimination related to sexual and gender identity or expression may intersect with non-LGBT related marginalities.

Central to the provision of care relationship support is whether people identify with the term "carer" or not. This may depend on a range of individual and relationship characteristics. For example, care relationships may be concealed due to stigma associated with mental illness disability, or a chronic illness (Koschorke, Padmavati, Kumar, Cohen, Weiss, Chatterjee, ... & Balaji, 2017). Carers may hide a care relationship out of respect for another person's decision to not disclose their condition or disability (Kittikorn, Street & Blackford 2006).

Furthermore, despite carer or "caregiver" being a reasonably established term in many health and human service settings, there is fluidity in the way people identify with it. Indeed, there has been contestation regarding the usefulness of this term and arguments it is divisive (Molyneaux, Butchard, Simpson & Murray, 2010). Similarly, its relevance to Aboriginal and culturally diverse communities has been

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questioned (Hill, Cass, Newton & Valentine, 2012), while disability researchers have challenged carer language dichotomies which focus on dependency or imply loss of autonomy (Stalker 2003).

Perceptions of the term carer orientate around supportive tasks, which originate from preluding affiliations, friendships or familial circumstances. However, distinguishing care relationships from other patterns of care in families and society, or interdependent characteristics of personal, gender and family relationships is difficult (Rogers & Barnes, 2003).

LGBT communities by their nature challenge more traditional definitions of gender and family models, while their relationships may exist within private or selective spheres where they feel safe to express them (Fish, 2006). Nonetheless, caregiving can implement and ascribe value to a range of relationships or social bonds that LGBT people may be part of (Williams, 2012). These include intimate partnerships and "family of choice" – including ex-partners or non-LGBT allies/supporters/friends (Barrett, Whyte, Comfort, Lyons & Crameri, 2015; Kia, 2012; Muraco & Fredricksen Goldsen, 2014). They may also be parent-child relationships (Parslow & Hegarty, 2013; Washington, McElroy, Albright, Oliver, Lewis, Meadows, & Elliott, 2015) or relationships between biological family members, such as siblings (Coon, 2007).

Whether responsibilities are named "caring" or not, people in care relationships require assistance, preferably before the toll on their physical and mental health becomes unsustainable. This does not mean replacing all informal supports – but rather working collectively with carers and service users to remove or mitigate damaging stress factors; and supporting relationships which help them thrive.

As care relationships express a variety of bonds, the health and wellbeing of people in care relationships can be improved when they are able to express themselves in ways independent of the need for support or the ability to provide it. When optimally supported and functioning well, care relationships should enhance emotional and physical independence, confidence, and the autonomy of all parties. Care relationships must also tap into community resources and capacity.

Higher rates of poor mental and physical health and disability among LGBT people suggests many have an increased likelihood of requiring informal care from a friend, partner of family member over their life course or knowing a person who does. With this in mind it is also worth noting that care relationships can be reciprocal and interdependent where two or more people exchange distinct types of support for one another, or the same type of support at various times (Greenberg, 1995; Stalker, 2003). The dichotomy between service user and carer is not always clear-cut. Reciprocity has been identified as a protective factor against carer stress and it is important for services to recognise and support this aspect of care relationships (del-Pino-Casado, Frías-Osuna & Palomino-Moral, 2011).

Disability, Illness and Stigma

Discrimination, stigma and systemic inequality directed at people with disabilities, chronic or mental illness, or because of care responsibilities, can add pressures to everyday life. This can create impediments to care relationships being visible, positive or advantageous.

For example, LGBT people with a disability have cited ableism within LGBT communities as an issue (Harley, Nowak, Gassaway & Savage, 2002; Jowett & Peel, 2009), as well as being desexualized in the eyes of the public and service providers (McCann, Lee & Brown, 2016). Assumptions about what make bodies "normal", attractive, capable of intimacy and sexual function can obscure LGBT identities among people with disabilities (Chappell, 2015).

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People in care relationships may also face poor disability access to LGBT community venues and events, which would otherwise provide a sense of belonging. Alternatively, they may experience social stigma related to a disability or mental illness. Exclusion like this can increase distress among LGBT people who are already at heightened risk of experiencing poor mental health. Discrimination in multiple spaces, such as disabled communities and LGBT communities for example, may be especially stressful if a person is struggling to accept their sexual orientation or gender identity, or feels alone due to homophobia in wider society or among disability networks.

Ageism

Ageism, too, can further marginalise people in care relationships. Ward (2000) notes that ageism can be a violation of human and civil rights by categorising and discriminating against people based on age. This deprives older people of autonomy, choice and can force dependent status on them. Ward highlights ageist views that perceive growing older as undesirable and enables community disassociation from ageing. Ageism is not limited to the general public and can also be institutionalised within professional healthcare practices, which has implications for care relationships. For example, a doctor may assume a person is incapable of providing support because of their age and ignore their observations about a patient.

Ageism can also impact LGBT people in unique ways. For instance, a social worker may assume an elderly man is heterosexual and living with a 'friend' simply because he has a grandchild. Rather than imagining the possibility the man may have formed a gay relationship later in life, the social worker's perceptions reflect tendencies in the field of gerontology to overlook the diversity of gay and lesbian ageing (Price, 2012). Haghiri-Vijeh (2013) notes cases of LGBT people who were excluded from end of life decision-making processes while their partners were in care. Experiences of ageism within LGBT communities and negative perceptions of ageing among gay men have also been raised (Tinney, Dow, Maude, Purchase, Whyte, & Barrett, 2015).

Gender

Lesbian, bisexual and transgender women can experience intersections of marginalisation due to gender related discrimination within public spheres and their families. For instance, research has identified gay men and lesbians are more likely to undertake parent care than heterosexuals (Glaesser & Patel, 2016). However, community expectations – or the carer's own expectations – of traditional gender roles (Reczek & Umberson, 2016) alongside assumptions lesbian or bisexual daughters were "single" may increase the likelihood they would be assumed to care for parents in comparison to their male counterparts (Parslow & Hegarty, 2013). It is not unlikely transgender women may also experience expectations of "nurturing" or "caring" behaviour upon transition and expression of their gender identity.

Race, Religion and Culture

Assumptions about race, religion or culture can also compromise health and human services provision and have flow on effects for the wellbeing of ethnically and faith diverse LGBT people seeking supports. Pallotta-Chiarolli and Rajkhowa (2017) note that being LGBT within a minority ethnic or faith community means navigating, negotiating and living between varied and multiple conventions, expectations and social codes regarding gender, sexuality and ethnicity. Young same sex attracted and gender diverse

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refugee and asylum seekers, for example, can experience significant ongoing stress and fear about the impacts of being out, and also the impacts of this upon their families due to shame and humiliation (Canales & Leonard, 2016).

Assumptions LGBT people do not exist within minority faith or ethnic communities can be prevalent within the communities themselves or originate beyond them. The perception, inclusion and influence of LGBT people is problematic in global, post-colonial countries and contexts where histories of colonialism, racism and segregation cross with contemporary, "Western" ideas of sexuality and gender identity.

Colonization of gender and sexualities can result in erasure of identities such as race, ethnicity, nationalism, class and gender and subsequently extend invisibility of LGBT sub-cohorts such as lesbian women, even in physical and cultural spaces that aim to disrupt hetero-normativity (Reygan, 2016). Similarly, the oppression of local diverse sexualities and genders may stem from views that see being L, G, B and/or T is a symptom of secular or decadent moralities of urban white culture (Pallotta-Chiarolli & Rajkhowa, 2017). Racism may also be experienced within LGBT communities (Walters & Old Person Jr, 2014).

Furthermore, cultural norms vary in relation to stigma and meanings attached to health conditions or disabilities, which can influence people's interaction with health and human services or their likelihood to provide care. Some research has identified a sense of "duty" among some ethnic and religious groups, yet human services do not always respond in culturally sensitive ways (Greenwood, Habibi, Smith & Manthorpe, 2015). It has been noted that social work literature, for instance, remains wanting for tools or guidelines to address the intersection of multiple marginalities, identities and experiences of LGBT people of colour (Walters & Old Person Jr, 2014). Without guidance, staff run the risk of responding poorly or focusing on a carer's ethnicity and assumed cultural preferences over their needs specific to their lived experience of gender or sexuality.

Case Study: Jin

Jin supports her mother who has severe arthritis, chronic depression and anxiety. Since the death of Jin's father, her mother has struggled at home alone, so Jin spends two hours daily travelling to and from her mother's house to assist with meals, personal care and transport to medical appointments. Jin also provides financial support to her mother, which is placing strain on Jin's relationship.

Jin is in a lesbian relationship of three years. Her partner is not "out" to her Chinese family, who hope she will marry a Chinese man. Jin's partner's family think her and Jin are just friends as they are studying at university together. Jin's partner is covering more of their household bills.

Jin's mother began phoning her late at night. During these calls, she swings between sobbing about her husband's death and becoming abusive, telling Jin she is a 'disgusting lesbian'. Being awakened late during the night and the stress of these calls is making Jin depressed, as is an increase in arguments with her partner.

Jin's mother was recently admitted to hospital due to a severe depressive episode. However, when she was discharged the duty social worker saw no need to refer her to extra supports because Jin's mother said via an interpreter she had a dutiful daughter and it was the 'traditional Chinese way' for the community to look after its own.

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Refugee Experience

LGBT refugee or migration experiences can also influence help seeking of LGBT people (Canales & Leonard, 2016). Past discrimination by service providers can deter LGBT people from accessing health and human services or self- disclosure. Likewise, distrust towards service providers can exist among refugee LGBT people who experienced persecution, violence and threats in their countries of origin (Reading & Ruben, 2011). There are high rates of post-traumatic stress and trauma among refugee populations (Reading & Ruben, 2011). Reluctance to use services can be particularly detrimental in populations who collectively cope with high rates of trauma as ripple effects spread through whole communities.

Even in countries where LGBT people have significant legal protections, they face more vulnerability than cis-gendered heterosexual populations to poor health. Substantial evidence indicates LGBT persons experience significant health inequalities and poorer outcomes than heterosexual persons worldwide (World Health Organization, 2013).

Mental Health System Experiences and Mental Health Outcomes for LGBT People

Cognizance of high rates of mental ill health among LGBT people is vital when working with those who are in care relationships, whether they are caregivers or receiving care. Risks to mental health, combined with threats to wellbeing associated with the direct or indirect stressors of caregiving, create a potential for crisis flashpoints in care relationships, which require monitoring and mitigation.

Research has identified LGBT people's experiences of discrimination can extend to their use of mental health services (Croghan, Moone & Olson, 2014; Kidd, Veltman, Gately, Chan & Cohen, 2011; Rutherford, McIntyre, Daley, & Ross, 2012). This includes an unhelpful legacy of stigmatising clinical theories and diagnosis ascribed to LGBT people, which was at the heart of many psychiatric institutions and practices (Drescher, 2015; Whitehead, Shaver, & Stephenson, 2016).

For a large part of modern gay, lesbian, bisexual and transgender history, LGBT people have been categorised by psychiatric pathological views that associate non-heterosexual attractions or transgender identities with disease, developmentally disruptive external factors (such as sexual abuse, or "excessive mothering") and other kinds of psychological inferiority (Drescher, 2015). This coincided with a range of heterosexist views, perpetuated within health, scientific and psychiatric circles at different times and which have served to exclude LGBT people. For example, some of these views labeled LGBT people as biologically inferior or suggested they have hormonal disorders, while others presented LGBT people as genetically inferior, emotionally inept or morally dangerous (Fish, 2006).

Moleiro and Pinto (2015) note although the American Psychiatric Association removed homosexuality from the Diagnostic and Statistical Manual in 1973, formal pathologisation of homosexuality did not cease with this change. The DSM-II contained the diagnosis of 'sexual orientation disturbance', which was then replaced by 'ego dystonic homosexuality' in the DSM-III, by 1980. Both these diagnoses continued to legitimise sexual "conversion" therapies among people with homosexual attraction who were distressed by or sought to change their orientation. Furthermore, the World Health Organization's International Classification of Diseases (ICD-10) did not remove homosexuality until 1992 and still contains a diagnosis similar to 'ego-dystonic homosexuality' which is due to be modified in the next revision (Moleiro & Pinto, 2015, pp. 2-3).

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Likewise, the World Health Organization is moving towards declassifying transgender identity as a mental disorder in the ICD-10 by no longer classifying "Transsexualism" under the category of "Mental health and disorders". It is proposed, instead to be classified as "Gender incongruence of adolescence and adulthood" under the category "Conditions related to sexual health" (Thomas, Pega, Khosla, Verster, Hana, & Say, 2017). 'Gender identity disorder' was only recently removed from the DSM and debate persists among transgender people as to whether it should remain at all. As Moleiro and Pinto (2015) note, many believe inclusion of transgender identity within diagnostic tools plays a significant role in perpetuating and rationalizing prejudice toward transgender people.

Transgender populations face unique obstacles accessing mental health care. Some include poor access to sensitive and capable professionals; difficulty finding information about gender dysphoria, hormone therapies or surgeries; inadequate access to safe prescription and supervision of hormone therapy; and poor affordability and availability of surgeries (Lo & Horton, 2016).

These obstacles impact core domains gender affirmation traverses, such as the social (e.g. name, pronoun), psychological (e.g. internal, felt self), medical (e.g. hormone therapy, surgeries, or body modification), and legal, such as official gender markers or legal name change (Reisner, Poteat, Keatley, Cabral, Mothopeng, Dunham,... & Baral, 2016). Achieving gender affirmation will also depend on a person's context (e.g. country and region), issues of economics or poverty, and the criminalisation of sexual and gender minorities.

This can cause mental distress and slow down outcomes transgender people highly anticipate. It can also increase the risk of violence and discrimination as they go through visible physical changes or when mismatching legal identification reveals transgender identity. Seeking mental health support to cope with such circumstances can be difficult. The complexities of accessing treatments to transition have added to the perception of service providers as "gatekeepers" among transgender and gender diverse people (Cruz, 2014).

For example, the World Professional Association for Transgender Care (WPATH) Standards of Care stipulates that mental health professionals are the first point of contact for transgender people seeking affirmation of their gender. Referral for hormone therapy or surgery requires a mental health professional's assessment of a person's eligibility, suitability and readiness, with lower genital surgery often requiring two mental health professional referrals. In addition, the use of DSM-5 is embedded in the Standards of Care to assess whether distress is not accounted for by another diagnosis (Schulz, 2018). This may result in reluctance among transgender people to disclose poor mental health where this may jeopardize medical transition or result in a perception of impaired decision-making capacity.

Health and human service staff should avoid assumptions that client distress is related to gender identity or sexuality, rather than a range of issues in other life domains. Discerning stressors and avoiding conflation of LGBT status with mental illness is crucial when supporting a care relationship where the mental distress of a transgender person is an issue.

Case Study: Emma

'Emma' is a transgender woman who lives with bi-polar 2 and PTSD. She has managed on a low dose of medication and meditation classes for three years. Over recent months her panic attacks increased after she was harassed by a group of men on a train who tried to rip off her dress. Emma's long-term bisexual partner Alice supported Emma to report the incident to police and assisted Emma to resume regular counseling. When Alice suggested Emma review her medication, Emma said she was fearful

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her symptoms would result in her psychiatrist refusing her female hormone prescriptions and gender reassignment surgery. Alice fully supports Emma's gender transition, but knows that the last time Emma increased her medication during a relapse of severe symptoms it helped.

Alice is experiencing insomnia, she cries often and worries about Emma. On occasion, she has left work early to meet and comfort Emma and ensure she does not self-harm. Recently she took Emma to hospital during a panic attack where she couldn't breathe. Emma did not present as a woman at emergency because she was afraid of how staff would react. Emma requested strict confidentiality from Alice about her symptoms getting worse and hides them from her GP. Despite these issues Emma and Alice remain excited about Emma's transition and Emma only has three more psychiatrist appointments over four months before she will be approved for hormone therapy.

SOLUTIONS AND RECOMMENDATIONS

Proposed solutions to improve LGBT access to health and human services include: addressing discrimination against LGBT people globally and within broader society, (Carroll & Mendos, 2017); legislative protections; improved service delivery standards and LGBT inclusive guidelines (Daley & MacDonnell, 2011); staff training on LGBT community needs (Irwin, 2007); de-stigmatisation/de-pathologisation of LGBT people (Lim, Brown & Jones, 2013); and the development of models of health and community care that increase both safety and relevance of services for LGBT consumers (Barrett, Turner & Leonard, 2013).

Consider Issues Surrounding 'Families of Choice'

Some carer support agencies and programs recognise the likelihood of LGBT people seeking "families of choice" due to possible or actual rejection by family of origin as a result of their sexual orientation or gender identity. Indeed, available research indicates a high value ascribed to friends as potential caregivers among LGBT people (Croghan, Moone & Olson 2014; Fredriksen-Goldsen, Kim, Muraco & Mincer, 2009).

It has been suggested that care circles initiated by partners, friends and community allies were a development among LGBT communities during the AIDS crisis when friends and partners were heavily impacted (Glaesser & Patel 2016; Shiu, Muraco, & Fredriksen-Goldsen, 2016). It is no surprise the protective nature of care relationships with friends and partners may be appealing or favoured, especially if formal services and family or community of origin, are seen as unsafe or inappropriate (Fredriksen-Goldsen, Kim, Muraco, & Mincer, 2009). It is not just the provision of care, which is valued. Family of choice can be a source of refuge for LGBT people who are caregivers and support them in their role as a carer enabling them to carry on during times of stress (Butler 2017; Dykewomon, 2017; Price, 2011).

However, friend and family of choice care remains under-researched (Shiu, Muraco, & Fredriksen-Goldsen, 2016). Furthermore 'families of choice' should not be assumed just because a person is L, G, B and/or T. This presumes circumstances, community connections and personal capacity capable of close and well-resourced relationships, which are supportive in family-like ways. This may not be the case.

In addition, some people may not have access to deeply reciprocal relationships with others who are physically able to meet their care needs (Hash & Nettling, 2009). Where illness carries tremendous

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stigma, such as in severe mental illness, people may find close relationships difficult to maintain. Some LGBT people may also be reliant on or supporting a person they are not "out" to or is homophobic (Barrett & Crameri, 2015) thus isolating them from other communities. Improved clarity of the relationship between care giving and families of choice, particularly among marginalised extended communities, is required. This will better inform targeted, helpful health and human service interventions, and aid the development of strengths-based approaches that reflect the full range of relationships LGBT people are in, and the extent to which these relationships are supportive to service users.

Relationship Recognition

It should be noted too, family of choice might be reluctantly used or a substitute term for people who would like more legitimacy afforded to their relationships or those of their loved ones. Legal recognition for LGBT people is inconsistently granted from country to country. Not all people wish to marry and some LGBT people may indeed prefer to accentuate less conventional relationships or see families of choice as a form of political resistance to conventional relationships overseen by the State (Price, 2011). Legal relationship recognition has been highlighted in many global LGBT human rights campaigns; likewise, many LGBT relationship recognition campaigns have focused on human rights, equality and the practical barriers insufficient legal recognition of partner relationships can create.

Beyond the legalities, common societal views of what constitutes families (including among non-LGBT people) can vary significantly and change over time, as can the visibility or acknowledgement of LGBT family structures. For example, Mizielińska and Stasińska (2017) cite shifts in Poland during public and political debates regarding two civil union bills proposed by SLD (the Democratic Left Alliance party) in 2011.Their research identified changes within Polish public discourse on LGBT families over the last decades from very conservative and traditional definitions of family in the early 2000s to more open definitions by 2010–2011. They note media debate shaped the public conversation on civil unions by contextualizing same-sex unions within wider-ranging changes in the way families function. They also found many voices in the public sphere regardless of whether they were for or against same-sex unions acknowledged the existence of LGBT parents.

Legislation does not always accommodate changing social views however, and as Mizielińska and Stasińska (2017) note 'family is a construct that suits a specific vision of society and its politics. It is nothing fixed and permanent' (p. 1812). It is therefore not surprising the rights afforded to LGBT people and the social recognition of their relationships are vulnerable to political and social volatilities.

The civil union's bills in Poland would have enabled tax benefits, widow pensions, the right to inheritance and social insurance to married gay and lesbian couples (however it excluded rights to adoption). Nevertheless, the civil partnership act or recognition of same-sex families did not prevail in Poland (Mizielińska & Stasińska, 2017), which no doubt had significant repercussions for some Polish LGBT people in care relationships.

Similarly, other issues have been identified for LGBT people in care relationships living in the United States. These include: being ineligible for government and workplace family benefits and leave; and high levels of discrimination in employment and housing, including public housing and long-term care housing (Fredriksen-Goldsen, Kim, Muraco, & Mincer, 2009). Again, progress addressing these issues remains dependent on political climates, which, at least currently for LGBT Americans, appears fickle.

Service providers ignoring or misunderstanding legal protections, and rejecting LGBT carers as powers of attorney (Croghan et. al 2014), partners (Valenti & Katz, 2014) or beneficiaries (Czaja,

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Sabbag, Lee, Schulz, Lang, Vlahovic,... & Thurston, 2016) has also been raised. There has been some success in achieving recognition of child guardianship via second parent adoption and recognition for non-biological parents in some countries such as the United States (Knauer, 2016) and Australia, where law is increasingly including and recognising gay and lesbian couples and their children (Sifris, 2014). However, where lesbian and gay parents cannot adopt (including transgender people in lesbian or gay relationships) remains an issue. From this perspective families of choice may not seem compensatory for people who would rather alter the legal expression of their closest relationships if they had the opportunity.

LGBT people in care relationships can experience discrimination and may face the indignity of requests to "prove" their relationship to service providers in countries where they are not legally recognised. Conscious recognition of how care dynamics are impacted by legal or social inequities can improve the sensitivity of service responses to mental distress among consumers, carers and families who struggle to have their bonds recognised legally and socially.

Marriage equality is one measure, that can influence access to income support programs — either by increasing or decreasing access — or by altering the household income or composition considered to determine eligibility for programs (Burwick, Gates, Baumgartner, & Friend, 2014). However, the right to marry needs to be matched with the principle that all marriages are equal; alongside non-discrimination laws on the basis of sexual orientation and gender identity which cover all life domains. This would better meet the needs of LGBT people across the range of care relationships discussed in this chapter. Despite the complexities of families of choice as a broad concept, they nonetheless remain a source of support for many service users and carers, and require recognition by service providers.

RECOMMENDATIONS AND TIPS FOR PRACTICE

There are many affirmative actions that health and human services can take in response to LGBT people in care relationships to help mitigate the impacts of discrimination and care relationship stress.

Address Heteronormative and Cis-Gendered Service Delivery

As touched on earlier in this chapter there are a growing number of affirmative practice guides available to assist health and human services develop inclusive practices for LGBT service users. Many of these provide a starting point and go some way in reducing discriminatory heteronormative and cis-gendered practices. In some countries, sector accreditation and minimum standards in LGBT inclusive service provision, such as the Rainbow Tick in Australia (Gay and Lesbian Health Victoria, n.d.), have been designed for the community, health and human services sectors as well as service benchmarking initiatives like the Health Equality Index by the Human Rights Campaign Foundation.

Work in this area also includes guidelines on the primary care of LGB health consumers in a range of countries including the US, Australia, UK, Canada and Ireland (McNair, 2010) and social work guides for best practice working with LGB people in Ireland (IASW, 2011). Guides associated with these standards can assist with the adoption of LGBT inclusive policies and practices. Similarly, literature initiatives addressing hetero and cis-normative practices have provided overviews of best practice. Examples of practical actions within these standards, guides and available literature include things like:

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- Use open gender neutral/appropriate language and terminology with service users when referring to relationships and gender identity (Irish Association of Social Workers, 2011; The Joint Commission, 2011);
- Design service forms which capture sexual and gender diversity or amend government mandated templates and documentation to ensure they are LGBT inclusive (Barrett & Crameri, 2015);
- Understand legal service provider obligations and anti-discrimination laws which, protect LGBT people and the range of jurisdictions in which they apply (The Joint Commission, 2011);
- Create a welcoming environment, e.g. display posters affirming LGBT communities, use images of LGBT people in service materials (Friedrickson-Goldsen & Hooyman, 2007), display rainbow, bisexual and transgender flags (Barrett & Crameri, 2015) ensure LGBT specific service brochures are available;
- Build mutually beneficial partnerships between LGBT community groups and health and human service providers to collaborate and pool resources with the goal to create effective care pathways and supports for LGBT people in care relationships (Coon, 2007);
- Train staff to ask questions regarding sexual and gender identity appropriately at service gateways (LGBTI Health Alliance, 2013) and challenge their assumptions about sexuality and gender (Barrett & Crameri, 2015);
- Be clear to service users and carers that all genders and sexualities are respected and considered equal (Barrett & Crameri, 2015);
- Incorporate affirmative recruitment policies, ensure equitable treatment and inclusion of LGBT staff (The Joint Commission, 2011).

The complex issues surrounding the development of carer and consumer experience and outcome measurement instruments, evaluations and assessments exceed this chapter's discussion. Suffice to say these are common tools in health, mental health and other human services settings that vary in application and domains of measurement, and are often tailored to services provided.

Furthermore, reliable measurement of service user and caregiver experience and outcomes at various points of the service journey over time is useful. Quality service validation and outcome measurement tools can increase knowledge of how carer or consumer concerns change, decrease or escalate over time. Ideally these instruments and tools can build service capacity to identify changes at various stages of care relationships and during different interventions (e.g. when a person is admitted, treated or discharged from a program/service). Service experience and outcome measurement instruments that capture LGBT data are required to detect causes of positive and negative outcomes for LGBT people in care relationships in a range of circumstances and service contexts.

However, measuring LGBT service experience requires ascertaining not only who LGBT people are, but also any capacity to record and report on this data. Data collection can be influenced by circumstances such as whether people are "out" about their sexuality (LGBTI Health Alliance, 2013; Valenti & Katz, 2014) or in a heterosexual relationship at the time but are bisexual, for example. Counting transgender people can be complex if they are not "perceived" as trans, are assumed to be cis-gendered or they identify as either 'male' or 'female' only. Transgender people may also provide different responses to queries regarding their gender at various stages of their journey, or identify in ways that are inconsistent with a range of legal documentation services may refer to (LGBTI Health Alliance, 2013).

These issues require consideration and consultation with LGBT communities, organisations, specialist service providers, activists and community groups (where possible) to design relevant, respectful data

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collection and measurement tools and decide how the information will be collected, by who, and under what circumstances.

Be Person Centered and Relationship Aware in LGBT Service Delivery

Outcomes for services wanting to improve LGBT consumer and carer inclusion depend largely on whether they understand an L, G, B and/or T person's lived experience, choices and views from a holistic perspective. This includes but is not limited to consideration of:

- The variability of desire among LGBT people to use an 'LGBT specific' service;
- How connected service users feel (or want to be) to LGBT communities;
- The separate and overlapping nature of gender and sexuality;
- Whether multiple identities are significant to a person and whether an order is attached to them (e.g. their ethnicity, religion, identity as a carer, gender identity, experience as a person with a disability);
- Pre-existing relationships the service user is party to (whether these are in the LGBT community or not), the importance and purpose ascribed to them and ways these are defined.

Ascertaining the priority of concerns for LGBT people and their allies in care relationships requires open in-depth inquiry and discernment to ensure quality support and referral. This is particularly the case in mental health or carer counseling settings where distress may be expressed in raw forms at crisis points. For example, poor mental health or increased anxiety among LGBT (or ally) carers could be due to any one or a combination of factors such as:

- A lack of support for their care role;
- Care relationship conflicts, or conflict external to the care relationship;
- Heightened concerns about the person they support (e.g. risk the person will self-harm or a sudden change in physical health);
- Discrimination against either themselves or the person they support;
- General poor health and human service system responses;
- A lack of service recognition of expertise within the care relationship or poor service recognition pre-existing support strategies;
- Significant care responsibilities being required over a prolonged period;
- Whether the carer provides support to more than one person.

Understand Service User Family Roles and Dynamics From LGBT Perspectives to Inform Work With LGBT People in Care Relationships

While LGBT consumer guides are useful, addressing care relationship needs is also required. Family-focused and integrated service approaches to supporting care relationships must reflect the range of relationships LGBT people are in, and consider the unique strains LGBT people are vulnerable to experiencing within their families and communities of origin (Friedrickson-Goldsen & Hooyman, 2007).

For example, information about sexual orientation and/or gender identity needs to be handled appropriately in family and care relationship contexts. Staff working with LGBT people in care relationships

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should ensure the status of their consent to disclose sexual or gender identity is clear. Health and human service staff need to explicitly clarify how information is recorded as well as how or where it is used and who with (LGBTI Health Alliance, 2013). This can avoid negative or damaging impacts of unwelcome disclosures, which may harm the foundations of a care relationship or reduce support to people who are party to them or lead to trauma or mental illness for the carer. Available literature on LGBT care relationships and caregiving also identify some useful actions and strategies, which include but are not limited to the following strategies:

- Identify carer and carer peer support groups that welcome LGBT people or develop LGBT support groups (Barrett & Crameri, 2015; Coon, 2007);
- Support consumer and carer peer groups and peer workers to improve LGBT literacy and awareness (Barrett & Crameri 2015);
- Develop or adopt policies ensuring equal visitation and the right for service users to identify a support person (or persons) of their choice (The Joint Commission, 2011);
- Provide professional development and training on the needs of those in care relationships (Schofield, Bloch, Herman, Murphy, Nankervis, & Singh, 1998) – this could include carer identification, referral, supports, carer advocacy and advanced planning with carers;
- Understand the law and ethics context which form a backdrop to all aspects of caring (Ross, 2003) and ensure this informs service practices with care dyads. Understand how this context intersects with laws impacting the rights afforded to LGBT people;
- Incorporate language, processes, procedures and practices that include and conceptualise family in a broad sense (Price, 2011) and which recognise LGBT parent arrangements and partnerships.

Consider Your Service's Approach and Tools

Systematic identification of carers at risk of poor mental health is a priority and it is a breach of care if the significant numbers of carers who meet the criteria for psychological distress are not offered support. In reference to palliative care, Hudson (2013) notes the challenge workers experience in supporting carers implies potential merit in recognising carers as "care recipients" to justify much needed time, resources and interventions where appropriate.

Screening consumers at health, disability, youth, aged, and mental health service gateways to ascertain if they have a carer partially addresses identification of carers. Additional clarification whether consumers provide care to another person would also be of assistance. This can enable prompt referral to interventions for people in care relationships and improve service provision for carers experiencing distress or poor health, whether it is related to their care role or not. In mental health settings screening for care responsibilities combined with competent data collection could aid understanding of the mental health impacts of care relationships, the mental needs of carers, which services carers use and how useful they find them.

Care responsibilities can be established without using the term "carer" and this may increase the likelihood of identification of care relationships. Asking questions of service users around their day-to-day life is helpful, such as 'are there people who rely on you to help with things?' or 'are there people you rely on to help you regularly or from time to time?' Regardless of whether service data collection fields refer to the existence of carers, face-to-face inquiry should reflect everyday lives and relationships. A

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list of thoughtful standardized intake instruments can be a useful prompt, particularly if they have been developed in consultation with communities a service is targeting.

Work and Plan Mutually, Particularly Where the Care Relationship Is at Risk

Where people in care relationships have negotiated issues of emergency planning, and a service user has made choices and decided to access supports in identified circumstances with the assistance of their carer, it is important that health and human services staff honor these choices. New care plans and support strategies for people in care relationships should include all parties and provide space for the carer to manage their health or self-care alongside the service user's needs.

Empowering LGBT people to clarify wishes is vital, especially where care responsibilities may not be as readily assumed as it would of "spouses" or biological families. This is particularly the case, if additional legal or practical steps are required to ensure the rights of primary carers, family members or partners are recognised. Identification of consumer preferences for nominated persons, guardians and medical powers of attorney is as important as identifying 'a carer'.

Connect With LGBT Organisations to Raise LGBT Literacy

Social isolation among LGBT people and their allies in care relationships can also be addressed through increasing awareness and recognition of care relationships within LGBT communities. This can include highlighting community access issues and barriers people in care relationships may face due to disability, mental or chronic illness, or age-related needs. LGBT people working in health and human services may be well positioned to play a unique role bridging the knowledge gap between services (including carer supports) and their own communities. Peer supports are an important source of social interaction and education (Broady & Aggar, 2017). LGBT consumer and carer peer leaders could increase care relationship literacy in LGBT communities. Peer carer and consumer reference groups, committees and organisations should reach out and encourage participation of LGBT people via LGBT community networks and at LGBT events.

Limitations

It has been noted that broader political, economic and social settings in which human services are positioned, including national and global contexts, also contribute to the possibilities and limitations of their interventions (Johnson, Mimiaga, & Bradford, 2008). Likewise, it is essential to concede this chapter's deliberations are limited by the research and literature they are based on. These are primarily from countries and settings where social welfare, health and human services, and social safety nets are available in adequate capacity to warrant discussion within social science and related professions. Conclusions are shaped by the views, experiences and perceptions of those who contributed to this literature as well as the chapter's author.

Another central limitation of this chapter is the emergent nature of literature on LGBT carers. Social work research specifically on LGBT people who provide regular informal support, or on LGBT social support systems, remains limited (Orel & Coon, 2016, p. 41; Willis, Ward & Fish, 2011, p. 1306). In addition, knowledge about LGBT people in care relationships is framed by persisting questions regard-

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ing the lived experiences of LGBT people which from a global view can be vastly different from one nation-state to the next.

However, there is no reason why existing knowledge (for example on carers, LGBT communities, health and wellbeing, disability, ageing, cultural and religious diversity and physical and mental illnesses) cannot be combined and contrasted to collectively inform health and human service professionals enough to further inquiry and initiate some service adjustments.

CONCLUSION

As a general social policy category, caregiving has undergone significant study and research. This is particularly the case in countries where de-institutionalisation has resulted in a greater policy focus on independent community living. However, a defining feature of this research is a lack of mature critical perspectives and an emphasis on dichotomies of carer vs service user rather than the relationship between them (Lloyd, 2003). In addition, research on caregiving generally focuses on biological family and marital relationships (Shiu, Muraco, & Fredriksen-Goldsen, 2016). Expansion of existing literature on carer relationship perspectives that focus beyond cis-gendered family frames would be useful.

Ending global inequalities among LGBT people, including human rights abuses against them, their families and communities, is an urgent and complex task. LGBT people in care relationships also must deal with the impacts of inequality and discrimination, which in turn may increase the likelihood of LGBT people being in a care relationship.

Workers in health and human services need to examine service systems and practices that perpetuate discrimination and health inequalities against LGBT people. For example, it is noted that the medical paradigm has been a causal power contributor to social isolation and exclusion of LGBT people, and prevented them from being recognised in family units. Countries that are anti-LGBT continue to treat people from these communities with shock therapy, medications and surgical procedures to alter "abnormality" in an attempt to treat and cure. Furthermore, health service provider assumptions and discrimination toward LGBT people may persist if underlying beliefs and attitudes shaped by medical, religious and cultural values are not addressed (Haghiri-Vijeh, 2013).

Unique circumstances of stigma and discrimination experienced by LGBT people, especially human rights abuses within mental health and human services settings, require proactive consideration by workers when planning supports for LGBT people (and their allies) providing or receiving care. Cultural safety for LGBT consumers and carers is particularly important when mental health interventions are required.

Reducing deficits in health and human service provision for LGBT people will address many barriers they may face in seeking validation of their relationships. However, service providers also need to voice resistance to discrimination against LGBT people and advocate for improvements to the rights granted them wherever possible to establish an environment for best practice with LGBT cohorts.

In addition, health and human service providers should ensure inclusion, recognition and support of care relationships is embedded in the design, implementation, review and evaluation of services. Professional practices should recognise the interdependent reciprocal qualities of care relationships and the intersection of LGBT, cultural, or disabled identities; as well as the social, economic, cultural and political context of LGBT service users and carers (Coon, 2007). Given the regularity of care relationships and the significant contribution they provide communities, it is essential that supports reach hidden carer

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cohorts like LGBT people. This can enable more sustainable, healthy, safer, connected and productive communities and reduce the financial and human costs of long-term care.

FUTURE RESEARCH

Research on caring in the LGBT community is in the initial stages of development, while existing empirical studies on caregiving and LGBT people are qualitative in methodology. Subsequently there is little quantitatively verified information on LGBT caregiving, including the demands on LGBT caregivers, supports to LGBT people in care relationships and the psychological impacts of care. Fredriksen-Goldsen and Hooyman (2007) note a lack of theoretical grounding to LGBT caregiving research and suggest life course and longitudinal approaches might provide more in-depth knowledge. This includes information on: whether people within diverse communities have similar or different life courses; the impact of specific risk or protective factors over different life stages; generational experiences of being in a care relationship; and the influence of family context and structure (Fredriksen-Goldsen & Hooyman, 2007).

Willis et al. (2011) also note LGBT carers are often spoken about as a single social identity, with bisexual and transgender issues being subsumed into gay and lesbian research and practice. Failure to distinguish between sexual orientation and gender assumes the same needs for both and has resulted in data not being separately analysed in research. A lack of available research evidence on transgender and bisexual carers is subsequently noted. Research on differing kinds of care practices within transgender communities is identified as an issue that should generate questions for future social work inquiry.

Available research on LGBT carers identifies that LGBT carers have poorer health and wellbeing outcomes than non-LGBT carers (Shiu, Muraco, & Fredriksen-Goldsen, 2016). This reflects broader health inequalities among LGBT populations. While issues for LGBT people and their allies in care relationships raised in this chapter are not universal, they may influence intervention outcomes and the choice of particular approaches. Health and human service providers need to examine how discrimination and stigma; and views, assumptions and societal or political treatment of LGBT people, may affect work with, or support for, the health and wellbeing of LGBT people in care relationships.

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Chapter 66
Gender Discrimination in Tourism Industry

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ABSTRACT

Compared to the past, business life has considerably developed in any area in the last century. All of the goods and services producing enterprises have made very important developments by taking advantage of science and technology at every stage of consumption and post-consumption processes starting from production. However, it can be said that the most important of these developments is the entry of the female workforce into the business life in the twenty-first century. The involvement of women in business life has not only changed the forms of production and presentation of the enterprises but also led businesses to achieve a completely different perspective.

INTRODUCTION

It is not possible to talk about the equality of the position and status of women in the workplace, their rights and working conditions with those of men; while women's are being actively involved in working life is considered one of the revolutionary events of the last century. Although women and men are protected under the laws that they should have equal rights both in social life and in business life, it is observed that gender-based discrimination is frequently made in business life. It has been demonstrated that discrimination in business life to be found in all of the developed and developing countries has resulted from many complex reasons including economic, social and cultural. When it has been taken into consideration that even the countries known as the superpower of the world have discriminated, it can be said that discrimination is mostly caused by personal and societal reasons.

One of the most important industries where gender-based discrimination is seen in business life is the tourism industry. Although the number of women working in the industry, which consists entirely of enterprises which offer different kinds of services, is about twice more than the number of men, women working in the industry are exposed to different practices and discrimination due to their gender. Until now, almost all of the studies done by academics and international organizations have shown that

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women are exposed to discrimination in terms of their jobs, wages, working conditions, promotion and internal social relations due to their gender. Giving women specific rights and responsibilities taking into account their gender, rather than their qualifications, background, education, and experience constitutes the most obvious indication of discrimination. Considering that the most basic aim of tourism businesses is to provide the best service to their customers in order to satisfy them and increase their income and profitability, it is important for the future of the businesses to evaluate the employees within the industry in terms of their qualities, rather than their gender. Therefore, the reasons and practices of gender discrimination in business life and tourism industry are given in this section and gender discrimination was generally evaluated as a result of the research and suggestions were made to prevent gender discrimination in tourism enterprises.

BACKGROUND

Concept of Gender and Gender Discrimination

Gender, in its broadest definition, defined as nature, sex and sexuality that gives a distinctive role to an individual for reproduction and provides to distinguish between male and female (TDK, 2017) refers to the biological orientation of being male or female (Dokmen, 2010). Although gender is a concept used to describe features of women and men that are different from each other, it is generally considered as biological sex and social sex in two respects. Biological sex is the type of gender that can be understood at first sight and is innate and expresses that the person is male or female. In other words, biological sex is due to the genetic constitution of people or their chromosomes. Social sex is also regarded as a concept including the perceptions of women and men in social life and expectations from them apart from biological differences (Yuki, 2003).

Since the days of mankind, women and men have undertaken different meanings, different duties, and responsibilities both in family life, societal and social life. From a biological point of view, this difference, which is only regarded as the difference in the chromosome, completely separates the woman and man in societal and social life. It has often been argued that these different meanings, duties, and responsibilities which are laid on them are related to nature. For example, it is believed that women must be responsible for children and households because of their productive or men must work out because they are physically stronger and more durable than women, which actually the result is arising from the difference between nature of women and men. Absolutely, there may be some points that women and men should be separated from each other in the home, society and social life. However, it is out of the question that some factors leading to discrimination such as the fact that women and men do not behave equally in formal relations and they are faced to different procedures in education and the right to life, which deprives them of the right to be an individual, are based on gender differences.

Gender-based discrimination, which arises from different reasons in societal and social life, is seen in almost all fields, and individuals are exposed to discrimination in social life, social environment, group and organization in which they are involved due to their biological and social gender. One of the areas where discrimination is most experienced is business life. Gender discrimination in business life is expressed as depriving a person of certain rights by assessing her/his gender characteristics that are not related to her/his work and performance (Arrow, 1973).

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The statistics and reports published by the International Labor Organization, the World Bank, the World Economic Forum, the European Commission and the Social Monitoring Organization has shown that gender inequalities continue to exist in the labor markets both globally and regionally for all the world countries and more women are exposed to discrimination (Uguz & Topbas, 2016). The most known gender discrimination against women in business life is vertical discrimination in which women are forced to work in lower positions and with less responsibility and they have little or no possibility of promotion. However, horizontal discrimination is also stated that different duties and responsibilities are given to women and men are assigned to more critical and responsive tasks although women have the same position at work with men for reasons such as women's active participation in the business life and increasing their levels of education (Boddy, 2002).

Another type of gender discrimination is expressed both explicitly and implicitly (Gutek, Cohen, & Tsui, 1996). Explicit perception of gender discrimination refers to that someone being a different sex is privileged despite the fact that all employees have similar characteristics. It is called the implicit perception of gender discrimination especially when a certain group of genders is negatively affected, although there is no suspicion or situation under consideration that would lead to think discrimination through an objective approach (Arisoy & Demir, 2007).

As stated above, unfair practices including that gender differences are used a criterion in business life with the difference between men and women in some roles and responsibilities; women and men are/are not employed in certain jobs due to their gender; they are not allowed to promote and they are less paid, are important issues. Thus, employment and professional agreement published by the International Labor Organization (ILO) for more than half a century, has also expressed that people are not allowed to perform any kind of discrimination, segregation or privilege, which is a destructive or disruptive for equality in order to acquire employment or profession or in their own employment or profession without regard to race, color, gender, religion, political belief, national or social structure. The ILO's contacts to prevent gender discrimination between men and women in business life are as follows:

- In code 100 Equal Remuneration Convention, which adapted 1951, there is a requirement that remuneration equality is provided between male and female workers for equal value work. Here, the remuneration also includes other remunerations such as basic wages, premiums, co-payments, and bonuses. On the other hand, it is underlined that things must be objectively assessed in order to ensure equal pay for contracts (ILO, 1951).
- According to code 111, Discrimination (Employment and Occupation) Convention, which adapted 1958, exclusion or preference made on the basis of race, color, sex, religion, political opinion, national extraction or social origin, which has the effect of nullifying or impairing equality of opportunity or treatment in employment or occupation is prohibited (ILO, 1958).
- In the Maternity Protection Convention, decisions have been made to protect the rights of women in the business life while giving birth and fulfilling their motherhood duties. It is stated that women who leave the work due to pregnancy can return to the same position, that the permission to be given to the working woman by the birth cannot be less than 14 weeks, that the woman can get breastfeeding more than once a day during the work and that the women cannot be removed from the work due to pregnancy and childbirth (ILO, 2000).

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In the United Nations Declaration of Human Rights, there are some items expressing that women and men are equal in business life. To prevent discrimination in the workplace, the Universal Declaration of Human Rights contains the following expressions (United Nations, 2017):

- Everyone is entitled to all the rights and freedoms set forth in this Declaration, without distinction of any kind, such as race, color, sex, language, religion, political or other opinions, national or social origin, property, birth or another status.
- Everyone has the right to work, to free choice of employment, to just and favorable conditions of work and to protection against unemployment.

Everyone, without any discrimination, has the right to equal pay for equal work. Everyone who works has the right to just and favorable remuneration ensuring for himself and his family an existence worthy of human dignity, and supplemented, if necessary, by other means of social protection.

Despite legislation, international conventions and the laws and regulations that countries make at the national level, the ongoing discriminatory practices in the workplace has shown that the problem of discrimination against women in business life is a matter of implementation rather than that of law. In business life, some of the features related to business are often attributed to only one gender and another gender is presumed to be completely devoid of these qualities. Some studies (e.g. Kobrynowicz & Branscombe, 1997; Blau & Tatum, 2000; Hemmati 2000; Ngo, 2000; Burgess, 2003; Turpcu, 2004; Fernandez, Pena-Boquete, & Pereira, 2009; Cave & Kilic, 2010; Costa, Carvalho, & Breda, 2011) have systematically demonstrated that women are exposed to discrimination in their working lives and they are less likely to benefit from opportunities in many areas such as education and training, vocational training and business life and are more employed for less qualified, low-paid jobs than men. On the other hand, discrimination against women in business life lead them to be more worn out spiritually, suffer psychological problems, low power and self-confidence, business-based conflicts and low prestige perception (Foster, 2000; Fiona, 1997).

Reason of Gender Discrimination in Tourism Industry

Today, the tourism sector is an important sector which contributes to the increase in employment opportunities, especially in most of the countries where traditional agricultural production has declined. As a matter of fact, according to the World Tourism Organization (UNWTO, 2016), the number of international tourists increased from 25 million in 1950 to 278 million in 1980, 674 million in 2000 and 1186 million in 2015. It is estimated that this number will reach 1.8 billion by 2030. Therefore, employment in the tourism sector based on manpower (labor-intensive) is more intensive than in other sectors, because the tourism industry needs less automation than the other sector and creates the need for the trained people because of the quality of service it provides. Thus, it is not seen that only 3-S (Sea-Sand-Sun) or a tourism strategy consisted of historical and natural beauties are centralized and, the organization and manpower which make these values meaningful also stand out when we look at the examples of developed tourism countries (Yanardag & Avci, 2012; Icoz & Kozak, 1998). It is not the right approach to limit this human resource to only those who work in tourism businesses, because the tourism industry offers a wide variety of employment opportunities (direct, indirect, and stimulated) in terms of volume and type of sector (Levy & Lerch 1991; Icoz & Kozak 1998; Liu & Wall 2006).

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Employees in the sector consist of people working in the industry, those who provide sources to it and those spending the obtained income from the industry for it again.

- Due to the types of employment mentioned above, the number of employees in the tourism industry can never be exactly determined. Along with women working in the tourism industry, women who work under indirect and stimulated employment take an important place in direct employment. On the other hand, it is impossible to clearly determine this number because of the presence of part-time and informal working women in the tourism industry. According to the report published by the World Travel and Tourism Council (2017), it is reported that more and more women are recruited in the tourism industry than those who are registered under the sector. Although it has been stated that the number of women working in the tourism industry all around the world is very high, it has been seen that gender discrimination is performed in a substantial part of the works carried out within the industry and jobs and recruitment are made based on gender.
- Different factors that change the tourism employment and gender distribution in employment can be summarized as follows (Olali & Timur, 1988; Purcell, 1993; Cooper, Fletcher, Gilbert, & Wanhill, 1993; Purcell, 1996; Akoglan Kozak, 1996; Kantar, 1999; ILO, 2001; Akoglan Kozak, 2001; Riley, 2002; Dura & Atik, 2002; Szivas, Riley, & Airey, 2003; Tukelturk & Percin, 2008; Gunel, 2009; Yunis, 2009; Halis & Camlibel, 2011; Albayrak, 2013):
- Due to the fact that the tourism sector is labor-intensive, the number of people working in this sector is high and this increase leads to a large of female employees. However, the number of women working in the sector is increasing, because women (feminine) can easily do the jobs in the sector.
- As tourism movements especially performed in mass can be carried out during certain periods of the year, tourism businesses have employed seasonal personnel as well as their permanent employees in order to meet the demands during these periods. A majority of services needed there consists of support services and these jobs are considered to be female-specific, which increases the number of women in seasonal recruitment.
- Enterprises such as hotels, motels, pensions etc. in the tourism industry are predominantly family businesses. Therefore, personnel including women, children, and elders who are family members, are employed much more than other sectors.
- Nowadays, it is seen that alternative types of tourism including cultural tourism, rural tourism, and gastronomic tourism as well as traditional mass tourism are performed in many countries. Women are actively involved in the production, presentation, and promotion of tourism products and services in the regions in which these types of tourism are taken place. In particular, women can be said to have a prominent effectiveness in business.
- Many enterprises, including accommodation and catering services, serve 7 days and 24 hours within the tourism industry. On the other hand, periods such as weekends, nights, special holidays are the periods when the employees of the tourism industry work the most intensively. Therefore, this is especially troublesome for female employees.
- Personnel share the same environments with the customers in many stages of the service production in the tourism industry. Guests are expected to meet their requests from the tourism industry. Female employees are finding employment opportunities in the tourism sector because hospitality and hosting are the mission to be taken on most women in the society. The fact that women can better address human emotions, their social and family status and personal characteristics are major reasons for preference to employ women in the hospitality industry. With increasing the

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number of female employees in the tourism sector every passing day, this situation leads to discrimination, because especially women are employed in such kinds of jobs.

- The number of women working in the tourism sector (especially the young ones) is higher than the other sectors. Women employment have increased in the tourism industry compared to other sectors because of reasons such as that many jobs do not require physical power in the service industry, flexible working hours, the presence of jobs in settlements or surroundings. It has been observed that women working in the sector are predominantly employed in departments such as housekeeping, laundry, food preparation and customer service. Due to the reasons mentioned above, it is possible to talk about employment between men and women on different conditions in the tourism industry. As a matter of course, different practices are acceptable to a certain extent. For example, some practices such as those particular women with low levels of education can be employed in rural areas or those having the same qualities are employed in the areas such as cleaning services and laundry during the production of services, can be considered as advantageous for them. However, discrimination against women at the workplace, the inequality in their personal rights and the exposure of women to negative practices due to their sexes constitute an important problem.

Woman Employment in Tourism Industry and Gender Discrimination

Economists and social scientists have studied on discrimination to which women are exposed in the workplace for a long time. The need for manpower is increasing day by day for the continuation of the labor-intensive tourism industry where manpower is used in the most effective way. In the last 20 years, the tourism industry has entered a period of a considerable growth and as a result, a rapid job opportunity and development have occurred in the tourism industry. Considering the total number of employment all around the world, the percentage of employment in the service industry is increasing in parallel with the number of travelers. According to the data in 2016, the employment rate of the service industry in the total number of employees is slightly over 50.0%. Similarly, the percentage of women employment which was 41.1% in 1995 increased to 57.4% in 2015 (ILO, 2016: 5). In parallel with this increase, the employment of women in the tourism industry is more than twice that of other sectors in the world (Cukier, Norris, & Wall,1996). However, the increase in the number of women working in the tourism industry does not show that the employment of women is adequate and appropriate. The main reason for this is that women and men are distinguished in the industry; that is, they are subjected to discrimination.

In the 21st century, women are now better trained, educated and improve themselves in different subjects and fields as much as possible; they aim to work with men in the jobs they do. However, the female labor force is faced with more different problems than men in both social and economic life. Many researches on this issue have determined that the multi-faceted discriminatory practices which women have experienced in the labor market are not due to their own choices and personal deficiencies but to sexist perception in social and cultural structure and the institutional hurdles they encounter in the education, vocational training, and employment process (Uguz & Topbas, 2016).

The diversity and complexity of the jobs carried out in the tourism industry prevent the generalization and researches on tourism have suggested that women are more limited to be in administrative positions which are better paid and require the ability. Although women constitute the majority of the labor force just like in tourism businesses as well as in other areas of tourism, their professions are generally gendered (Fiona, 1997). For example, women in the industry are mostly employed in housekeeping and

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laundry services (Halis & Camlibel, 2011; Catherine & Pine, 2003; Doherty & Manfredi 2001; Woods & Vienhland, 2000), while they are hardly ever assigned to be the senior manager (Akgemci, 2004).

Gender discrimination occurs vertically and horizontally in the tourism industry. Women and men are working in different jobs in horizontal discrimination; in other words, women are recruited as a waitress, cleaning lady, housekeeper, travel agency saleslady, while men are employed as waitress, barman, and driver. The typical sexual pyramid is common vertically in the tourism industry. The typical sexual pyramid is also prevalent in the tourism sector; men are dominant in the key tasks of the administrative positions, whereas women are concentrated on the jobs which have very fewer opportunities to develop career and are at lower levels (Hemmati, 2000). The problems women have experienced in the tourism industry and discrimination against them are summarized below:

Inequality in Promotion and Glass Ceiling

Despite the increase in the number of women working in the tourism industry, women are more likely to work in lower and middle positions because of the existence of male-dominant systems. Even women often put up with higher personal costs (time, labor, pressures, prejudices, etc.) than men to access the top positions (Mueller, 2004). However, even highly educated and experienced women are left behind men in achieving to the top management. In general, the opinions of business owners are that working women are not promoted and brought to the top management since they are actually working temporarily because of having children and their responsibilities within the family (Aytac, Sevuktekin, & Işıgıcok, 2002).

According to the researches, the reasons that prevent women from reaching the top are as follows (Griffin, 1993):

- Women have to slow down and stop their career processes in order to raise children after a short time when they start working, which is a major obstacle in reaching to the top management. In fact, the results of the researches have shown that pregnant women are primarily considered to dismiss them for employment.
- Women generally have to provide a balance between their responsibilities of family and business life. It is thought that women will not have enough time for senior management tasks when they need to allocate some time for the responsibilities for their children and domestic tasks. It is therefore assumed that women will be seriously affected by the role conflict in the course of a career.
- The belief that women do not have management, engineering, business, leadership skills or that these skills do not adequately develop has formed a prejudice that they are not ready for the responsibility of the senior management.
- Women are considered to be inferior to men in terms of establishing the authority and making someone work.
- Women are thought to lack the ability to manage because they are emotional.

Arbitrary obstacles which are placed between women and senior management in order to stop women from progressing to the top management levels of the organizations and prevent them from proceeding regardless of their achievements are called the glass ceiling (Boone & Kurtz, 1992). The glass ceiling is a concept that is used when women are not as well assigned to the upper levels, even though they are as much educated as their male colleagues (Celikten, 2004).

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The glass ceiling leads women, especially married and with children, to less promoted and rewarded in terms of their careers when compared to their male colleagues in business life. This ceiling is seen as a very difficult obstacle to break. Honestly, very few women can overcome these obstacles and become top managers (Aytac, 2000). Women can be promoted at the bottom of the glass ceiling, but they cannot go beyond the ceiling (Baxter & Wright, 2000).

The obstacles defined by the concept of the glass ceiling leads to problems in the organizational performance due to at least three reasons. Firstly, women managers feel that they are prevented from reaching senior management levels because of their gender, reducing their desire and motivation to work. Therefore, the belief that overtime work or high achievement will not be rewarded reduces efficiency at all levels of the organization. Secondly, the lack of homogeneity among the members of the senior management results in weakness and lack of judgment. Finally, gender-based obstacles to female managers cause the organization to be deprived of the skills and resources it needs (Dreher, 2003).

One of the most important sectors where the glass ceiling is felt by women workers is tourism. According to the studies on the relevant subject carried out on different countries, a large number of women who are especially working in hospitality businesses have expressed that they feel the glass ceiling in the enterprises where they are working and it interrupts their careers (Li & Leung, 2001; Mathur-Helm, 2006; Anafarta, Sarvan, & Yapıcı, 2008). Studies conducted by Garey (1991) and Dalkiranoglu (2006) have also shown that women are suspended from businesses that require leadership and high responsibility and they are directed to lower-degree jobs. Besides, these studies have stated that women are not adequately trained to become managers and are negatively influenced by male-dominant work network and they are also professionally exposed to non-credibility and unreliability of the top management.

Working Hours and Salary System

Although the International Labor Organization adopted equal pay between male and female workers for equal works in 1951 (ILO, 1951), women's wages correspond to 70% to 90% of men's wages in the majority of countries (Plantenga & Remery 2006). On the other hand, the European Commission has stated that the wage difference between men and women is constant and women earn 5% less than men per working hour (ITUC, 2009).

The fact that women's jobs are usually temporary and low-wage jobs lead to a very limited number of women in employment, an increase in the rate of transition to unemployment, a decline in the quality of women's workforce and a restriction of women's long-term employment. The common belief that women are working to support their family in many countries leads to the idea that women constitute a spare workforce that is needed during the period of economic growth and is marginalized during the period of regression.

One of the discriminatory behaviors in wages between women and men is the issue of additional rights. As female workers with very low chances of becoming managers in the industry are not able to benefit from the rights of additional indicators and severance pay, which are valid for certain managerial levels, it means that women have not the same opportunities as men as they get the financial opportunities provided by the market (Alparslan, Bozkurt, & Özgöz, 2015).

For the tourism industry, a majority of women are employed in part-time or temporary jobs or they are less paid for the same work. For example, the study conducted by the ILO (2016) has demonstrated that 57.0% of women are employed in part-time. Although the laws that have been issued since the industrial revolution have suggested equal pay for equal work regardless of gender difference, it is seen

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that they are inadequate and not performed. The position of the woman in the tourism industry is usually concentrated in labor-intensive but unqualified and low-paid jobs (Aytac, Sevuktekin, & Işıgıcok, 2002). The concentration of women and men in certain business lines such as tourism leads to the advantageous position of men in education and work experience resulting in low wages paid to women (Hoffman & Everett, 2005), women face on discrimination on wages even if they progress equally to men in their careers (Stockford, 2004). Thus, some studies have shown that women working in the same position with men in the tourism sector receive less salary (e.g. Burgess, 2000; Demirkol, Fidan, & Pelit, 2004; Santos & Varejao, 2007; Skalpe, 2007; Thrane, 2008; Soria, Ortega-Aguaza, & Ropero-García, 2009; Eyuboglu, 1999; Costa, Carvalho, Caçador, & Breda, 2012; Garcia-Pozo, Campos-Soria, Sánchez-Ollero, & Marchante-Lara, 2012; Yanardag & Avci, 2012; Uguz & Topbas, 2016).

One of the most important issues faced by women in the tourism industry is related to working hours. The industry continuously provides service and businesses incessantly need to provide service, which requires working for long hours, occasional night, evening, weekends and special days. Although it is also valid for male employees, this negatively affects women's working life in the industry.

Mobbing, Emotional and Physical Abuse

Mobbing or emotional abuse is also expressed as psychological and emotional pressure, coercion and psychological violence. Psychological violence is apparently or allusively applied to the person by their superiors or colleagues through disrespectful, degrading, abusive, aggressive behaviors. If this situation is continuous, the person desires to move away from the environment in which s/he exists and her/his job or s/he is sick of it. Undoubtedly, mobbing can be applied to both women and men at work. However, female employees are less resistant than men in coping with mobbing.

Physical abuse is one of the most important problems faced by women working in all sectors, especially in the tourism sector. This situation causes women to be unable to work for a long time in the industry, not to love their jobs, to be unsuccessful, and to be unable to exist within the enterprise. Women are occasionally disturbed and negatively affected to make a career in the tourism industry because of the reasons such as working in the same environment with the customer, night shifts and the comfort of the customer in the psychology of entertainment in the tourism industry. Most researches (Kozak, 1996; Demirkol, Fidan, & Pelit, 2004; Turker, 1997) in various countries have indicated that sexual harassment is a common problem in the tourism industry. On the other hand, the image of harassment in the tourism industry affects women's career opinions negatively. In particular, the use of the female body as a marketing and media tool in the tourism industry, suggests that the journalists who advertise tourism are working in a male-dominated field and affects its reflection on the press negatively (Tuncel, 2011).

Multiple Role-Taking

Women who are actively involved in today's work life must fulfill the tasks they undertake at work while trying to fulfilling the role of being a spouse and mother in the house, which the community places a load on them. Especially in patriarchal societies, the career plans of women in business life can be kept in the background, because it is assumed that the role of women is to carry out housework and provide care and development of children. Although there are differences depending on the country, the traditional role of a woman is limited to home, child, and family and it is restricted by various obstacles to reach certain positions in business life (Aytac, 1999). There is also the exact opposite situation. It is seen that

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women who are actively involved in business life and are particularly working in any job with irregular working hours such as tourism sector, but have more responsibilities in the family neglect their jobs and/or push their careers into the background (Ozkaya, 1999). Women have generally stated that they have to marry late and are late to have children when they care about their careers, and they are divorced because of it (Alben & West, 1992).

Women's Personal Preferences and Perceptions

How women see themselves, their education, personal development, experiences and special interests show their orientation to the profession and their potential for success and promotion in the profession they will perform. Although the roles socially undertaken to women in the past have influenced their job preferences, their preferences and professional perceptions affect how women perceive themselves and where they put themselves in their careers. Women often perceive themselves as sexless and equal to men in business life. However, the attitudes that women face in their business life or in the family can also affect their personal preferences. According to the studies, almost half of the women do not feel the support of their families and there are conflicts in terms of family and work roles. In other words, their psychology and their roles can be considered as problems of women employment in tourism besides external factors that prevent women (Li & Leung, 2001). Conversely, Iverson (2000) found that women in the hospitality industry have fewer salary expectations than men both in the beginning and high levels of their career. Even the differentiation of this expectation based on sex indicates that female employees feel disadvantaged. According to the study by Ensari et al. (2006), it was demonstrated that women do not consider themselves structurally suitable for being a manager and some women prefer to be governed because they believe male competitors are better at managing.

Other factors related to women's self-perception in business life are as follows (Orucu, Kılıc, & Kılıc, 2007):

- Women's attitudes towards gender roles,
- Internalizing social values without questioning,
- Accepting negative prejudices against women and acting in this direction,
- Experiencing work-family conflict and unable to cope with feelings of guilt because of the role assigned to her in the family,
- Lack of self-confidence, indecisiveness, not knowing what you want; the desire to improve themselves and change circumstances, not to have faith or opportunity,
- The belief that the system cannot be changed, feeling the obligation to support the system,
- Not to choose to advance in career/not to be career oriented, not to bear requirements and necessities to advance in career.

Lack of Role Model

Role modeling is a peer-to-peer relation which aims to provide individual and professional development experienced between an experienced member and inexperienced member through coaching, supportiveness, and guidance (Palankok, 2004). As noted earlier, female employees are assigned to senior positions in tourism businesses, which leads to the lack of the sufficient number of role models to guide women in tourism enterprises.

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Organizational Culture

Every organization has a personality that distinguishes them from the others, as each individual has its own unique personality. Organizational culture is defined as a collection of values, standards, norms, beliefs, and understandings shared by members of the organization (Hofstede, 1980). Different structures of organizations constitute this culture and distinguish the organization from the others. An organizational culture that an organization creates within itself also affects employees' morale, motivation, job satisfaction, job commitment and even their decision to stay in business. However, in today's world, the organizational culture which is dominated by men makes it difficult for women to be fully included in this group, which makes the woman alone in the organization. Men are more reluctant to share power with women in their business lives (Hale, 1999). It is obvious that women have difficulty in being involved in organizational culture in tourism businesses, especially because the line management of the enterprises in the tourism industry are mainly consisted of men and women are employed for certain jobs.

Organizational Politics

One of the most important factors affecting the business life of women is organizational politics. Politics such as unwillingness of the business to hire female employees, imposition of some restrictions in spite of the conflict of the enterprise with job specifications in the recruitment and selection of the personnel or matching of the characteristics sought in candidates who are to apply for employment with gender have yet to distinguish between women and men regardless of their qualifications. On the other hand, the enterprises can practice different gender-based applications depending on the management policies in the processes such as the promotion of the employees, their inclusion to the staff and pricing. Ersari et al. (2016) also suggested that there is a significant relationship between organizational culture and women's careers, and the career barriers are decreasing for women as organizational culture increases in terms of function/integration.

Non-Participation of Unofficial Non-Corporate Communication Networks

It is a body of unofficial relations composed of interpersonal relationships among members of an organization in an organization, in a workplace. Informal organizations that, while not written, allow an organization to fulfill tasks completely and in the shortest possible time, represent a whole of interpersonal relationships that affect decisions within a business or an organization. In business life, women are generally perceived as a minority by men and are excluded from informal relations (Starcevich, 1999). For example, male managers maintain their relation networks by participating in sports, social organizations and evening meetings after working hours, whereas women are passive in their participation in social networking because of their responsibilities in private life (Mueller, 2004). Women are excluded from this process because informal relations that are maintained outside the workplace are also the environment where business related matters are also discussed.

Gender Stereotypes: Occupational Segregation and Position

The main reasons for discrimination are prejudices. In business life, especially the prejudices of those, who are managers, against women and men lead to discrimination among people. When women are

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included in business life, different perceptions and assessments have emerged for both women and society. In particular, many obstacles such as where the woman will work or which professions they may be involved in have been tried to be created. Hence, society expects people to undertake different roles in terms of their sexes. These expectations expressed as gender roles also determine the distribution of the duties that individuals are required to perform between genders (Yaylaci, 2004). Gender stereotypes result from the belief that there is a difference in personality, role difference, and stereotypical professional gender differences between men and women. The most important problem women encounter in business life is gender stereotypes (Demiriz & Yasar, 2009; Barutcugil, 2002). While the prejudice that women are more emotional and men are more rational is based on the belief that there is a personality gap between men and women, the belief that men should not work in a lower position than women is based on the prejudice that there is a role difference between men and women. The above-mentioned situation is also valid in the tourism industry and administrative tasks are deemed appropriate for men, while duties such as cleaning and service are seen as suitable for women. Thus, Tucker (2007) stated that women are not suitable for working in the tourism industry and tourism is considered as male business.

FUTURE RESEARCH DIRECTIONS

This chapter emphasizes the gender discrimination in the tourism industry. It seems that gender discrimination is major problem both developing and developed countries. This distinction does harm to both women who are working and/or want to work or make a career, and businesses. The issue is also an important problem for the tourism industry. Therefore, it should be investigated by all enterprises, especially tourism enterprises. This will be an important step in avoiding the gender discrimination of research and supervision by national and international organizations. On the other hand, the studies to be done on how the gender discrimination in the tourism industry can be put into practice in future periods is also thought to be an important step in solving this problem.

CONCLUSION AND RECOMMENDATIONS

Gender equality in business life remains a common problem that is addressed at a national and international level today. Although female employees are now as knowledgeable and talented as men, they are subjected to discrimination because of their gender rather than their job qualifications. Discrimination begins in the process of the employment application and continues in working conditions, in personal rights, in organization culture, and in progress/promotion opportunities. This means that the enterprise does not give a chance to the qualified employees and cannot make sufficient use of its qualified employees in terms of business. However, it is clear that this situation creates much more negative effects on female employees. Women who are exposed to discrimination in business life are disappointed and lose their business commitment.

It is clear that the main reason for discrimination in business life is not biological differences. Manpower is more needed as mental power than physical strength in our age when mechanization has intensively continued. Hence, almost all of the issues that women are exposed to discrimination in business life do not originate from biological differences. In general, it can be seen that gender discrimination in business life is caused by social norms, roles and statues assumed to women. It is obvious that the social

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difference of the sexes cannot be an obstacle in succeeding a job because many women now fulfill their responsibilities such as being a mother, a spouse, looking at a house and they can also be successful in their work as much as men.

One of the most obvious discriminatory practices related to sex in the workplace is seen in the tourism businesses. The structure and characteristics of the works carried out in the industry are considered to be the male and female task and this prejudice is taken into consideration on the recruitment and the distribution of duties and responsibilities. Therefore, women are mostly employed in unskilled jobs and are not allowed to promote in the industry as a whole. On the other hand, it is seen that the employment of married and/or women with the child is obstructed as a significant part of the enterprises in the industry provide uninterrupted service every day of the year. It is important to change the perception of the countries to the family life. It can be recommended to the countries that men should be trained on home and child care so that women and men can equalize their responsibilities in family life.

One of the important issues women face in the tourism industry is related to wage inequality and working conditions. Due to the unpredictable demand, women in the tourism industry are often seasonally employed and paid less, and female employees are firstly laid off when it comes to dismissal. The most important problem of it seems to be the implementation of these regulations, not legal regulations. Therefore, the top management units of the countries should examine the difficulties in practice in order to avoid it.

Unfortunately, the prejudices settled into society in a long-time cause women to be in a learned helplessness. Social disciplines and general acceptance lead women to be unable to advance themselves in senior positions or to accept less salary, more adverse working conditions. In fact, this is due to the fact that women have been left behind in the business life since the beginning of their careers. On the other hand, occupational groups that are socially associated with gender are also obstacles for women to work in some jobs.

Gender discrimination in the tourism industry is seen as a major problem for the promotion of women in their business life (glass ceiling). On the other hand, women do not have sufficient access to training and career development processes that prepare them for the management positions. Given that women are as educated, skilled and self-developed as men, it is obvious that the main reason why women are not recognized for their opportunities to promote is the organizational cultures and policies of the businesses. Therefore, first of all, the businesses should break down their prejudices against women and include all talented and qualified people in the studies on career development regardless of their gender in order to solve the problem.

As the tourism industry is focused on relaxation and entertainment, it can also cause women to be interpreted by both business people and customers from time to time. In particular, the misinterpretation of a female figure in the written and visual promotional activities can lead women to be damaged verbally and physically, which completely distracts women from the idea of working in the tourism industry.

Consequently, it is clear that women are subjected to gender discrimination for various reasons in all businesses, especially in the tourism industry. Given that women are as talented, skilled and educated as men, it is the easiest precaution for business managers to move away from social prejudices and recognize women equal rights with men. On the other hand, the measures taken by the countries and the follow-up of the legislation they enact will cause the problem to be solved.

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KEY TERMS AND DEFINITIONS

Gender: The state of being male or female and generally used with reference to social and cultural differences rather than biological ones.

Gender Discrimination: Gender discrimination indicate that discrimination based on a person's gender. Because of gender discrimination, woman (man) do not have the same opportunities for education, careers, social life, etc.

Gender Discrimination in Tourism Industry: Because of the diversity and complexity of the jobs carried out in the tourism industry, from biological point of view woman and man separate about their work.

Gender Role: Gender role socially constructed of women and men. Gender role or behavior learned by a person as appropriate to their gender, determined by the prevailing cultural norms. Gender role change among different societies and cultures, classes, ages and during different periods in history.

Tourism Industry: Tourism industry occur people, activity and organizations involved in providing services for tourist on holiday. The tourism industry includes hospitality (accommodation, restaurants), transportation (airlines, car rental), travel facilitation and information (tour operators, travel agents, tourist information centers), and attractions and entertainment (heritage sites and theme, national, and wildlife parks).

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Chapter 67
Work Role Stress and Employee Outcomes:
Mediating Role of Job Satisfaction

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ABSTRACT

Work Stress is taking its toll on the working adults and the evidence of its detrimental effects is building in India as in United States and other developed countries. Research has shown that the work stress can lead to physical and psychological disorders that reduce job performance and negatively affect other employee outcomes. The purpose of the study was to examine the direct effect of work role stress on job satisfaction and two dimensions of employee outcomes i.e., organizational citizenship behaviour (OCB) and turnover intention in the Indian organizations. The study further aimed to investigate the mediating role of job satisfaction in the relationship between work role stress and two employee outcomes, i.e., organizational citizenship behaviour and turnover intentions. Data, using a structured questionnaire comprising the standard scales for work role stress, job satisfaction, organizational citizenship behaviour and turnover intentions, was collected from a diverse range of organizations in Delhi and NCR.

INTRODUCTION

Work stress is a common concern for managers and organizations and has been a popular topic within the public media over the past decade (Mamberto, 2007; Sanchez, 2011; Scarff, 2000). The consequences of stress are of utmost importance to both the employees and the employers. Previous research has shown that employees across all levels in the organizational hierarchy are susceptible to the negative consequences of stress (Kiev, 1987; Spielberger, Vagg & Wasala, 2003). Stress has been shown to have deleterious effects on employees' mental and physical health, as well as on organizational outcomes such as job satisfaction, job performance and employee turnover (Ngo, Foley & Loi, 2005; Kahn & Brosier, 1992; Newton & Jimmieson, 2009; O'Driscoll & Beehr, 1994).

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According to a survey by Associated Chambers of Commerce and Industry of India in 2015, increasingly demanding schedules and high stress levels in the private sector employees are leading to depression or general anxiety disorders and have wide range of effects like daytime fatigue, physical discomfort or low pain threshold leading to increased absenteeism and performance deterioration. The survey further points out that nearly 45% of the corporate employees in private sector sleep less than 6 hours a day, leading to severe sleep disorders. A high cost economy which has been in prolonged slump; shrinking incomes and fear of layoffs are considered to be some of the causes. On-the-job stressors range from ambiguous job roles and deadline pressures, which are compounded by off-the-job stressors like dual-worker families, responsibility of taking care of the children as well as addressing the concerns and medical issues of aged parents. This presents a unprecedented set of challenges for the growing number of sandwich generation Indians, who have to simultaneously take care of their elderly parents as well as young children. This presents a unprecedented set of challenges for the growing number of sandwich generation Indians, who have to simultaneously take care of their elderly parents as well as young children.

There is voluminous research evidence showing that work stress can lead to physical and psychological disorders that reduce job performance, impeded learning transfer, resistance to change, employee dissatisfaction, absenteeism, tardiness, turnover, counterproductive behaviors and accidents leading to an increase in the overall cost of the organization in medical expenses (e.g. Danna & Griffin, 1999; Quick et al., 1997; Quick & Tetrick, 2003; Schat, Kelloway & Desmarais, 2005, Spielberger et al., 2003). Hence, there is a financial and ethical impetus for the organizations to reduce strain.

The present study aims to contribute to the existing body of literature by examining the direct effect of work role stress on job satisfaction, organizational citizenship behavior and turnover intention in the Indian Organizations. The study further aims to investigate the mediating role of job satisfaction in the relationship between work role stress and two employee outcomes, i.e. organizational citizenship behavior and turnover intentions.

Objectives of the Study

- To study the direct effect of work role stress on
  - Job satisfaction (JS)
  - Organizational citizenship behavior (OCB)
  - Turnover intentions (TI)
- To examine the effect of job satisfaction on OCB and turnover intentions.
- To investigate the mediating role of job satisfaction in the relationship between work role stress and the following employee outcomes
  - Organizational citizenship behavior
  - Turnover intentions

Theoretical Framework and Hypotheses Development

Work Role Stressors and Employee Outcomes

Research in the field of stress has been focused on the stimulus response paradigm suggesting that the employees in an organization have to work in stressful working conditions (stressors), which can result in a response characterized by negative attitudes and behaviors (Netemeyer, Maxham, & Pullig, 2005;

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Walker, Churchill & Ford, 1975). It has been seen that work role stress leads to emotional exhaustion in the employees leading to the feelings of helplessness, lowered self-esteem and lack of accomplishment (Cordes & Dougherty, 1993; Moore, 2000). The employees thus feel anxious and frustrated and develop negative attitudes towards their organizations, their work and towards themselves. This, in turn leads to job dissatisfaction. A large number of studies have shown a negative relationship between work role stressors and job satisfaction (Bedeian, & Armenakis, 1981; Chang, Rosen, & Levy, 2009; Lang, Wittig-Berman, & Rizkalla, 1992; Mulki, Jaramillo & Locander, 2008; Ngo, et al., 2005; Örtqvist &Wincent, 2006; Sullivan & Bhagat, 1992).

However, the impact of work role stress has not been as widely studied on another work outcome namely organizational citizenship behavior (OCB). Citizenship Behaviors are defined as the discretionary behaviors on the part of an individual, not formally recognized by the organizational reward system, yet they contribute to the effectiveness of the organization (Bateman & Organ, 1983; Smith, Organ & Near, 1983). The employees to support the interests of the organization even though they may not directly lead to individual benefits (Moorman & Blakely, 1995) often perform these behaviors. Since OCBs are acts that typically go beyond an employee's roles and duties, it is likely that work role stress will discourage employees from indulging in such behaviors. When the stress at work becomes excessive and exceeds available resources, employees respond by reducing OCBs rather than compromising on their task performance. This is because of the fact that the negative consequences associated with lower OCBs are less than those associated with lower task performance (Organ, 1997). Further, social exchange theory (Cropanzano, Rupp & Byrne, 2003), effort-reward imbalance theory (Siegrist, 1996), and resource allocation theory (Kanfer & Ackerman, 1989) all propose that higher levels of work stress will lead to lower levels of OCBs. Recently, Jain and Cooper (2012) conducted a study on 402 operators working in business processing organizations (BPO) in northern India, to study the impact of stress on OCB. They found that stress was negatively related to most dimensions of OCB.

Working in a stressful work environment leads to lower job involvement and psychological withdrawal from the work group (Brief & Aldag, 1976) and hence increases the turnover intentions. Intentions to leave may be regarded as the last stage in the sequence of withdrawal cognitions, ranging from thinking of leaving to intending to search for alternative employment (Tett & Meyer, 1993). Work role stress is considered an important antecedent of withdrawal cognitions and turnover behavior (Hom & Griffeth, 1995). According to the theories of role stress, ambiguous or conflicting role demands evoke role strain (Kahn et al., 1964; Netemeyer, Johnston & Burton, 1990), which in turn leads to dissatisfaction and turnover behavior (Fisher & Gitelson, 1983; Jackson & Schuler, 1985; Ngo et al., 2005).

The review of literature for this section demonstrates that role ambiguity; role conflict and role overload will have a negative impact on employee outcomes. In order to explore the relationship between work role stressors and the important employee outcomes of job satisfaction, OCB, and turnover intentions, the following hypotheses are proposed:

H1: There exists a negative relationship between work role stress and OCB
H2: There exists a positive relationship between work role stress and Turnover Intentions
H3: Work role stress is negatively related to Job Satisfaction

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Job Satisfaction and Employee Outcomes (OCB and Turnover Intentions)

The relation between job satisfaction and turnover intentions is well documented in the literature (e.g. Porter et al., 1974; Shore and Martin, 1989; Tett and Meyer, 1993). Cognitions about the job impact subsequent judgement-driven behaviours such as quitting (Fischer, 2000), meaning that, with increasing job satisfaction, disassociation is less likely (Maertz and Griffeth, 2004; Wright and Bonett, 2007). Analysis of the relationships between JS and OCB has generated a considerable volume of empirical work (e.g., Bateman and Organ, 1983; MacKenzie et al., 1998; Rioux and Penner, 2001; Schappe, 1998; Smith et al., 1983; Tansky, 1993; Williams and Anderson, 1991). In the current state of knowledge, relations are more often positive (e.g., Podsakoff et al., 2000), or sometimes nonexistent (e.g., Konovsky and Organ, 1996; Schappe, 1998; Williams and Anderson, 1991), but they are never negative. Payne and Webber (2006) found that the JS was positively related to service-oriented OCB, customer satisfaction, and customer loyalty. The extent to which the predictor variables interacted with one another and the role of employment status on these relationships was explored. High levels of JS or affective commitment resulted in more service-oriented OCB for employees and self-employed workers, whereas high levels of both resulted in more service-oriented OCB for owners. Chhabra and Mohanty (2014) also found a positive relationship between JS and various dimensions of OCB, mediated by organizational commitment.

To explore the relationship between JS and the two dimensions of employee outcomes i.e. OCB and turnover intentions, we propose the following hypotheses:

H4: There exists a positive relationship between Job Satisfaction and OCB
H5: There exists a negative relationship between Job Satisfaction and Turnover Intentions.

Mediating Role of Job Satisfaction in the Relationship Between Work Role Stress and Employee Outcomes

The proposed hypotheses and the theoretical arguments suggest that job satisfaction is a possible mediator in the relationship between work role stress and employee outcomes of OCB and turnover intentions. As discussed earlier, work role stress leads to emotional exhaustion, leading to the feelings of helplessness, lowered self-esteem and lack of accomplishment (Cordes & Dougherty, 1993; Moore, 2000). This leads to the feelings of frustration and anxiety among employees, who develop negative attitudes towards their organizations, their work and towards themselves. These negative feelings towards the job and organization impact subsequent judgement-driven behaviours such as whether to put extra effort in the existing job or in extreme circumstances, quitting the job. When the employees are satisfied with their jobs, they show considerable trust in its goals and values of the organization and are willing to work hard for it (Mowday et al., 1982). As a result, they play proactive roles and devote more energy than is required by the formal job description. The employees thus translate the positive effects of JS into extra role behaviours. These employees are also less likely to think of leaving the organization at the time of difficulties. Therefore, given the links of work role stress with job satisfaction, and of job satisfaction with employee outcomes, it seems likely that at least part of association between work role stress and employee outcomes is explained by job satisfaction.

H6: The relationship between work role stress and OCB is mediated by job satisfaction.
H7: The relationship between work role stress and turnover intentions is mediated by job satisfaction.

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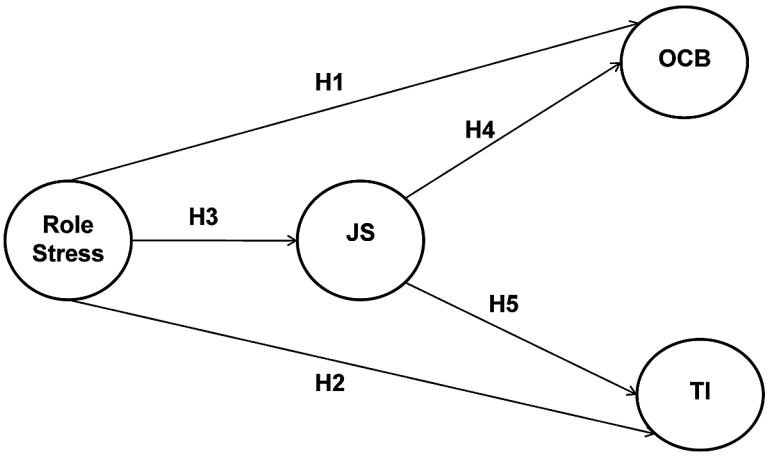
Figure 1. Proposed model



Methodology

Sample

Purposeful (maximum variation) sampling was employed (see Patton, 1990). A diverse range of organizations was approached to enable investigations of patterns relating work role stress, job satisfaction, and organizational citizenship behavior and turnover intentions. In all 450 professionals were contacted but only 347 completed questionnaires were collected (response rate 77%). The sample consisted of the executives mainly from five sectors viz. education (40), service (86), information technology (112), manufacturing (62) and health care (14) working in Delhi and NCR. However, 33 respondents were from the other sectors. Respondents ranged in age from 22 to 64 years (mean age 30.91 years and SD 9.25), 234 of them were males and 113 were females. Out of the total sample size, 164 respondents were married and 183 of them were single. Maximum number of respondents fell in the age range of 31-40 (116) and the majority of them (207) had the tenure ranging from 1-7 years in the organization.

Procedure

The employees of the various organizations were contacted and were asked to fill in the questionnaire. They were appraised regarding the academic purpose of the study and confidentiality of their responses was ensured.

Research Instruments

- **Work Role Stress:** Work Role stress was measured using a 13-item scale developed by Peterson et al. (1995). The scale consists of 3 items for measuring role conflict (e.g. I often get involved in situations in which there are conflicting demands), 5 items for measuring role ambiguity (e.g. I have clear planned goals and objectives for my job) and 5 items for measuring role overload (e.g. There is a need to reduce some parts of my role). Responses to these items were on a 5-point scale

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(1= strongly disagree and 5 = strongly agree). However, the five items pertaining to role ambiguity were reverse-coded.

- **Job Satisfaction:** Facets of job satisfaction was measured using nine items chosen from Cellucci and DeVries (1978) questionnaire. There were two items for satisfaction with pay, three items for satisfaction with coworkers, two items for satisfaction with supervisor and two items for satisfaction with work itself. The sample items for measuring these four facets respectively are, "My organization pays better than competitors", "When I ask people to do things the job gets done", "The managers I work for back me up", and "My job is interesting". These nine items were rated on a five-point Likert scale (1= strongly disagree and 5 = strongly agree). High scores imply satisfaction with the facets of job satisfaction and low scores imply dissatisfaction with the facets of job satisfaction.
- **Organizational Citizenship Behavior:** OCB was measured by adapting the Podsakoff et al. (1990) Organizational Citizenship Behavior Scale. The three OCB factors included were sportsmanship, conscientiousness, and civic virtue. Examples of these items are 'is willing to risk disapproval in order to express individual beliefs about what is best for the company' and 'turns in budgets, sales projections, expense reports, and other documents earlier than required'. These items were rated on a five-point Likert scale (1= strongly disagree and 5 = strongly agree). Average scores on the eight items were taken to yield a summary score reflecting OCB.
- **Turnover Intentions:** A 3-item scale originally developed by Vigoda and Kapun (2005) was used. The sample item is 'I will probably not stay with this organization for much longer'. The scale ranges from 1 (strongly disagree) to 5 (strongly agree). A higher score meant higher intentions to leave the organization or department.

Control Variables

Control variables in this study included gender, age, marital status, industry type and organizational tenure. Gender was assessed using a dichotomous scale: male (1) and female (2). Marital Status was also assessed using a dichotomous scale: married (1) and single (2). Industry type was assessed using a nominal scale: education (1), service (2), IT (3), Manufacturing (4), health care (5) and any other (6). Age and organizational tenure was measured in years using a continuous scale. Gender, age, marital status, industry type and organizational tenure were controlled for all regression analysis in order to minimize their influence on the focal variables in the study.

DATA ANALYSIS, RESULTS AND DISCUSSIONS

Table 1 presents descriptive statistics (means and standard deviations), correlations, and Cronbach alpha. All scales demonstrated good internal consistency.

Table 2 shows the results of the multiple regressions. As can be seen from the table, role stress has a significant negative relationship with OCB ($\beta = .21$; $p < 0.01$) and a significant positive relationship with turnover intentions ($\beta = .195$; $p < 0.01$) explaining 10.2%, and 21.4% variance respectively. These findings validate the hypotheses H1 and H2. There is also a significant negative relationship between role stress and job satisfaction ($\beta = -.402$; $p < 0.01$), explaining 25.4% variance and supporting H3. The effect of job satisfaction on OCB comes out to be significantly positive ($\beta = .331$; $p < 0.01$) explaining 18.2%

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variance and validating H4. Further, as proposed and supporting H5, job satisfaction has a significant negative effect on turnover intentions ($\beta = -.27$; $p < 0.01$), explaining 28.5% variance.

Table 1. Descriptive statistics and correlations for focal variables

	Focal Variables	Mean	S.D	1	2	3	4	7	8
1.	Role Stress	2.77	.98	**(.72)**					
2.	Job Satisfaction	3.44	.95	.47**	**(.81)**				
3.	OCB	3.64	.89	.31**	.42**	**(.73)**			
4.	Turnover Intentions	2.69	1.14	-.41**	-.51**	-.16**	**(.87)**		
7.	Age	30.91	9.25	.11*	.14**	.03	-.21**		
8.	Tenure	6.41	7.39	.10	.14**	.05	-.22		

Note: Cronbach's (1951) alpha reliability coefficients appear in the diagonal *p<.05; **p<.01

Table 2. Multiple regression results

	H1	H2	H3	H4	H5
Dependent Variables →	OCB	TI	JS	OCB	TI
Independent Variables ↓	β	β	β	β	β
Step 1: Control Variables					
Gender	.15	-.27	1.32**	-.22	.018
Age	-.04	-.008	-.03	-.02	-.02
Marital Status	.13	-.13	-.79	.34	-.29
Industry Type	.17	-.19	.33	.09	-.12
Tenure with the organization	.06	-.08	.09	.03	-.05
ΔR^2	.009	.064**	.054**	.009	.064**
Step 2: Predictor					
Role Stress	-.21**	.195**	-.402**		
JS				.331**	-.27**
R^2	.102	.214	.254	.182	.285
ΔR^2	.093**	.15**	.20**	.172**	.221**
Adjusted R^2	.09	.20	.241	.167	.272
F	6.45**	15.44**	19.27**	12.57**	22.54**

*p<.05;**p<.01

The mediating effect of job satisfaction on the relationship between role stress and two employee outcomes viz. OCB and turnover intentions was examined in four stages as suggested by Baron and Kenny (1986). According to them, the positive test of mediation requires three conditions to be fulfilled. First, the independent variable must be related to the dependent variable. Second, the independent variable must be related to the mediator. Third, the mediator must be related to the dependent variable. All

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of these relationships should be significant to have a mediation effect. Further, the relation between the predictor and criterion should be reduced after controlling the relationship between the mediator and criterion variables.

As hypotheses H1, H2, H3, H4 and H5 are supported; the required conditions for testing the mediating role of job satisfaction in the relationship between CSE and two employee outcomes are fulfilled.

Table 3. Regression results for mediating effects of job satisfaction

	H6	**H7**
Dependent Variables→	OCB	TI
Independent Variables↓	β	β
Step 1: Control Variables		
Gender	-.22	.01
Age	-.03	-.02
Marital Status	.35	-.30
Industry Type	.08	-.12
Tenure	.04	-.05
ΔR^2	.009	.06**
Step 2: Predictor and Mediator		
Role Stress	-.10**	.11**
JS	.278**	-.213**
R^2	.198	.322
ΔR^2	.189**	.258**
Adjusted R^2	.181	.308
F	11.96**	23.0**

*p<.05;**p<.01

As can be seen from Table 3, there is an evidence of partial mediation of job satisfaction in the relationship between role stress and both the employee outcomes i.e. OCB and turnover intentions. OCB had a decrease in beta weight from $\beta = -.21$ ($p < 0.01$) to $\beta = -.10$ ($p < 0.01$), as did turnover intentions from $\beta = .195$ ($p < 0.01$) to $\beta = .11$ ($p < 0.01$). Further, job satisfaction was significant in both the regression models towards OCB ($\beta = .278$, $p < 0.01$), and turnover intentions ($\beta = -.213$, $p < 0.01$), showing that job satisfaction acts as a mediator in both the relationships.

In order to support the above results, the Sobel test was used. The Sobel test results indicated that there was a significant mediation effect of job satisfaction for role stress and OCB ($Z = -4.98$, $p < 0.01$) and for role stress and turnover intentions ($Z = 6.118$, $p < 0.01$). These results are in line with and support H6 and H7.

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DISCUSSION

The purpose of this study was two-fold. The study aimed to see the direct effect of work role stress on job satisfaction, OCB and turnover intentions. The study also aimed to see if job satisfaction acts as a mediator in the relationship between work role stress and two employee outcomes viz. OCB and turnover intentions. The findings based on the sample from diverse range of organizations show that work role stress is negatively related to OCB and positively related to TI, proving H1 and H2. There is also a significant and negative relationship between work role stress and job satisfaction, hence supporting H3. The effect of job satisfaction on employee outcomes is also seen to be significant, positive in case of OCB and negative in case of TI. This supports H4 and H5. The results find evidence for the fact that there is a direct link of work role stress with job satisfaction and the employee outcomes of OCB and TI. In addition, the results prove that the link between work role stress and employee outcomes is partially mediated by JS. These results are in line with H6 and H7.

Research has shown that OCBs enhance productivity; help organizations compete with limited resources; and lead to greater coordination among employees (Koys, 2006; Podsakoff and MacKenzie, 1994). Especially in knowledge economy, where roles are less defined and the external environment is rapidly evolving, organizations increasingly rely on employees to fill the gap between what they are specifically rewarded for and the emergent behaviors necessary for the organizations to remain competitive. Organizations in this competitive scenario are attempting to become an employer of choice, which refers to an organization that outperforms its competition in attracting, developing and retaining people with required talent for its business (Joo and McLean, 2006). There is also a quest for the strategies to retain key employees without giving in to what are seen as excessive demands.

The findings of this study contribute to the organizational behavior literature by supporting previous studies linking role stress, job satisfaction and employee outcomes. Our results support a mediation model in which work role stress, as a distal predictor of behavior, influence the employee outcomes of OCB and TI through the proximal predictor of job satisfaction. The workplace today poses a lot of responsibilities on the employees and people are expected to be work long hours. The organizations require the employees to be "on-job" 24X7, by using highly advanced communication technology. This creates a serious work-life imbalance leading to increased stress. To make the matters worse, in this age of competition, the employees are sometimes required to perform roles which are conflicting and ambiguous. People experiencing this high work role stress are less satisfied with their jobs and feel less attached to the organization. This lack of satisfaction is reflected in the employees' behavior which would then be focused on doing only the work which is absolutely necessary and a part of their job description. These employees will not walk an extra mile for the organization and are likely to harbor the thoughts of leaving the organization. When organizations provide favorable work settings and stress free environment, the jobholders view these as rewards and thus reciprocate by making an emotional attachment with the organization, which may be demonstrated through more effort, regular attendance and greater participation in work. Strong emotional attachment and identification with the organization drives individuals to demonstrate behaviors, which are not directly linked with the formal reward system but support the effective and efficient functioning of the organization. Their psychological attachment may stimulate an increased desire for affiliation, without direct links to reward system and they may contribute to achieve organizational effectiveness by helping others with organizationally relevant tasks.

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Implications of Results for Research and Practice

The present study has practical implications for managers and policy makers. The study shows that work environment features play an important role in workplace attitudes and behaviors. Organizations that are able to modify the work environment to make it reasonably stress-free are more likely to have satisfied employees who are willing to walk an extra mile for the organization and are less likely to think of leaving the organization. The organizations need to find ways for mitigating the factors contributing to job stress such as long working hours, employees possessing conflicting roles and highly ambiguous jobs. The managers should ensure that the employees understand their role requirements and expectations and have an adequate information about their jobs. However, since it is difficult to reduce workplace stressors beyond a point, it is important to find other effective ways to improve job satisfaction of the employees since it has serious ramifications in the form of decreased citizenship behaviors and increased turnover intentions. In order to achieve that, the managers can formulate various HR policies and practices, which nurture job satisfaction among the employees. Organizations need to find innovative solutions ensuring functional autonomy, flexibility and a sense of ownership people have towards their job. This involves making jobs more interesting and challenging, including employees in the decision making process and providing them with the opportunities for growth and advancement. Employees working in such an environment will go beyond the call of their duty to ensure its effectiveness and efficiency. The biggest benefit of the employees displaying improved OCBs will perhaps be reflected in reduction of attrition rates with all its associated benefits of cost and time efficiencies. These findings are supported by Guchait and Cho (2010) who suggest that the employees' belief that an organization intends to support them through its HRM practices (training, rewards etc.) can make them more committed to the organization and lower their turnover intentions. It further confirms the recommendations made by Biswas and Varma (2007) that Indian organizations need to pay more attention to employee perceptions of the work environment, thus providing an environment, which is employee friendly and promotes in-role and extra-role performance. The role of HR managers is of paramount importance in this scenario, as the employees perceive many of the critical organizational variables through the lens of their interactions with their managers. Practices such as counseling, development planning and career planning and supporting the subordinate through various initiatives like mentoring can increase the subordinate's engagement with the organization (Krishnan and Singh, 2010). This engagement will be reflected through the employees exhibiting the organizational citizenship behaviors and intending to stay with the organizations even at the time of adversity.

Limitations of the Study

As the design of the present study was cross-sectional, causal conclusions concerning the impact of job satisfaction on OCB and TI cannot be drawn. For example, the present study suggested that job satisfaction leads to organization citizenship behaviors and TI. However, it can be possible that exhibiting citizenship behaviors will lead to satisfaction with the job. With the cross-sectional design, there is no way of teasing out the relative contribution of these effects. A longitudinal study where job satisfaction is related to OCB and TI at a later point in time would provide a more rigorous test of relationships.

This study uses self-report measures to assess stress, job satisfaction, citizenship behaviors and TI. Although the measures used were reliable, the very fact that the independent, dependent and mediating variables were assessed using self-report measures could lead to the problems of common method vari-

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ance. Further, with self-report measures, social desirability biases become a cause of concern. Future studies can also employ qualitative techniques to identify emergent themes in this area. The sample of the study was limited to the Indian employees from Delhi and NCR. There might be some culture specific issues, which were overlooked. Future studies may benefit from an exploration of a wider range of employees at different organizational levels, cultures, and sectors.

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Chapter 68
Mental Workload Assessment and Its Effects on Middle and Senior Managers in Manufacturing Companies

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ABSTRACT

This chapter aims to know the mental workload level and its effects on middle and senior managers in manufacturing companies. The chapter aims to know the mental workload level related to gender, age range, civil status, number of children, years of experience, and worked hours per week. As method, the NASA-TLX method was implemented. This method measures mental workload based on six dimensions: mental demand, physical demand, temporal demand, effort, performance, and frustration level. Data was collected by applying an online questionnaire. Results indicated that some dimensions contributed to mental workload in the following decreasing order: mental demand, temporal demand, effort, performance, frustration level, and physical demand. Similarly, results from mental workload level varied from 55.73 to 64.10. Nevertheless, there was no clear relationship between the gender, age range, civil status, number of children, years of experience, worked hours per week, and mental workload level. Finally, employees manifested mental workload mainly due to stress, mental fatigue, and headache.

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INTRODUCTION

Nowadays, the scientific and technological advances that have been developed in the last hundred years have facilitated the daily life in several aspects, decreased the physical effort in the tasks, as well as work-related activities that require greater technical and intellectual skills for their implementation. In fact, this affects the way in which occupational diseases have evolved as well as the Ergonomics approach by applying theoretical principles, data, and methods to design which are used to optimize the human well-being and overall work system performance (Dul et al., 2012; International Ergonomics Association (IEA), 2018).

Specifically, Ergonomics is both a scientific discipline and a profession. From a scientific discipline perspective, and according to several authors, Ergonomics involves the understanding of interactions among human beings and other elements of a system. On the other hand, from a professional perspective, Ergonomics applies theoretical principles, data, and methods to design in order to optimize the well-being and overall performance (Dul et al., 2012). In addition, to achieve its objectives, Ergonomics applies knowledge from different sciences, such as Medicine, Physiology, Physics, Psychology, among others.

Therefore, Ergonomics is a multidisciplinary science (International Ergonomics Association (IEA), 2018). According to the object of study, Ergonomics is divided into Physical Ergonomics and Cognitive Ergonomics. Physical Ergonomics focuses on physical aspects of work and human capabilities, such as force, repetitive movements, and body postures (Choppin, Roth-McDuffie, Drake, & Davis, 2018), the design of working environments to fit human physical abilities, i.e., Physical Ergonomics deals with physical variables that can affect human beings: repetitive movements, body postures, physical load, and environmental conditions (Goonetilleke & Karwowski, 2018). In order to achieve its main goal of optimizing the human well-being and the work systems performance, Ergonomics applies different assessment methods. For instance, methods of Physical Ergonomics include Rapid Upper Limb Assessment (RULA), the Rapid Entire Body Assessment (REBA), the National Institute for Occupational Safety and Health (NIOSH) lifting equation, Occupational Repetitive Action tool, and the Job Strain Index (JSI) (Otto & Battaïa, 2017).

However, the cognitive Ergonomics domain comprises mental and psychological variables, such as perception, information processing, decision-making, action-taking, memory, reasoning, and mental workload (Belkic, 2003), as they affect interactions among human beings and other elements of a system (Wung & Schatz, 2018). This last variable, mental workload, focuses in activities that are mental or cognitive in nature and may comprise physical coordination, but excludes physical activities (Jin, Zheng, Pei, & Li, 2017). Currently, it is presented in most of employees from different labor sectors (agriculture, aviation, manufacturing, services, education, among others) (Claxton Bomme & Fendley, 2018; Jin et al., 2017; Li, Cao, Lin, Braithwaite, & Greaves, 2017; McLean, Abry, Taylor, Jimenez, & Granger, 2017). As a result, it is urgent to promote research on the causes, effects, and methods of evaluation, as well as the generation of new knowledge concerning the mental workload in different labor sectors. Also, cognitive Ergonomics includes methods, such as NASA Task Load Index (NASA-TLX), Systematic Human Error Reduction and Prediction Approach (SHERPA), Subjective Workload Assessment Technique (SWAT), Cognitive Work Analysis (CWA), and Task Analysis for Error Identification (TAFEI) (Stanton, Salmon, Walker, Baber, & Jenkins, 2018). All these methods help reduce or eliminate occupational risk factors, provide well-being to workers, and improve the organizational performance in companies (Khani Jazani, Salehi Sahlabadi, & Mousavi, 2018).

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Furthermore, the mental workload impact varies from one individual to another, for this reason, the authors of this chapter propose a research to determine the level of mental workload in middle and senior management from the manufacturing industry in Tijuana, Mexico. Also, it is intended to acknowledge those factors that may affect the level of mental workload, such as age, civil status, the number of children, just to a few aspects. At the same time, authors also seek to know the effects that mental workload may have on middle and senior management in the manufacturing industry; such effects may include mental fatigue, work errors, memory loss, irritability, among others.

Finally, in order to measure the level of the mental workload, the authors applied the NASA-TLX method, which is one of the most popular worldwide method.

LITERATURE REVIEW

Mental Workload

Mental workload is defined as the amount of effort involved in performing a particular task (Boet et al., 2017). Currently, employees from different labor sectors (agriculture, aviation, education, manufacturing, among others) are involved in several projects in the company where they work for. This fact leads employees to use, analyze, and process too much information at the same time, which cause them a mental workload. Additionally, employees are under frequent pressure to deliver results at a specific period of time, which increase the mental workload. For instance, in the agricultural sector several authors, such as Jin et al. (2017) have stated that recently agricultural vehicles have new features, which may lead mental workload to seem to be a critical problem. Similarly, Bashiri and Mann, (2015) point out that the increasing trend of automation in agricultural vehicles raises some concerns about the drivers' mental workload in such vehicles. These authors performed a case study using a tractor driving simulator, where they found that reaction time and number of errors made by drivers both decreased as the automation level increased.

Moreover, they found that there is a correlation among performance parameters and subjective mental workload reported by the drivers. Regarding the field of aviation, Young, Brookhuis, Wickens, & Hancock (2015) found that this field is the second one with more research on mental workload; only after driving field. Some other authors have focused on the decision-making and performance of pilots (Moriarty & Jarvis, 2014; Salas & Maurino, 1988; Wiegmann & Shappell, 2017). In fact, some studies have indicated that impaired situational awareness (SA) resulting from an excessive mental workload significantly degrades the quality of decision-making (Endsley & Garland, 2000; Lee & Liu, 2003; Salas & Maurino, 1988). Several authors mention that workload of pilots and air traffic controllers are heavy during landing, which leads to a stressful management of mental workload (Loft, Sanderson, Neal, & Mooij, 2007; Moriarty & Jarvis, 2014). Excessive mental workload in pilots may cause communication conflicts and accidents. For instance, Mosier et al. (2013) documented that 52% of communication conflicts occurred during the approach phase. Another study reported that communication errors were involved in 37% of aircraft accidents (Plane Crash Info, 2013).

Several authors have found that education is another labor sector in which employees suffer from high levels of mental workload. For instance, Xiao et al. (2015) study the effects of mental workload in the work ability in primary and secondary school teachers. They measure the mental workload levels and the work ability by applying the National Aeronautics and Space Administration-Task Load Index

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(NASA-TLX) and Work Ability Index (WAI) questionnaires, respectively. Also, these authors found that primary and secondary school teachers work ability reached the highest level at a certain level of mental workload (55.73 < mental workload ≤ 64.10). When the teachers' mental workload was lower than the level, their work ability had a positive correlation with the mental workload, i.e., their work ability increased or continuous stable with the increasing mental workload. Also, these authors found that the percentage of teachers with good work ability increased, while teachers with a moderate work ability decreased. These authors concluded that too high or low mental workload will result in the decrement of primary and secondary school teachers' work ability, whereas moderate mental workload (55.73∼64.10) will benefit the maintaining and stabilization of their work ability. Likewise, Mohammadian, Malekpour, Malekpour, Zoghipour, and Malalekpour (2015) analyzed the rate of mental workload on teachers and its correlation with their quality of life (QOL). As in the previous study, these authors applied the NASA-task load index (TLX) tool, and a questionnaire of QOL (SF36). They found that the median from mental workload between the teachers with two jobs and single job was significantly different ($P < 0.05$). Also, it was found that in the median between mental workload and dimensions of QOL (activity limitation due to emotional problems as well as social performance and general health) there was a significant negative correlation ($P < 0.5$). The median of the mental workload score was higher among teachers, which can negatively impact teachers' life quality, and the quality and quantity of their education. Some other authors that have done research on mental workload in teachers are Pimenta et al. (2015), who point out that long or demanding tasks are often performed in an educational context, which causes teachers feel exhausted with a performance degradation. In addition, Gray, Wilcox, and Nordstokke (2017) studied mental workload on teachers; they mention that teachers are in a profession with high demands, since they work to meet the diverse learning needs of their students. Consequently, many teachers experience high levels of stress contributing to fatigue, and unfortunately, many of them quit.

Furthermore, other labor sector where employees have experienced high levels of mental workload is the manufacturing industry. Choe, Tew, and Tong (2015) mention that operators who work in the material handling system must perform physical and cognitive tasks. These cognitive tasks include supervision, decision making, and control based on the available information. Thus, the automation of cognitive activities has become as significant as the automation of mechanical activities in today's material handling systems. These authors claim that a high level of cognitive automation may improve the operators' performance and decrease their mental workload. As a result, an increased level of cognitive automation and improved information flow can provide a better support material-handling operator, thereby enhancing manufacturing flexibility. Similarly, Zhao, Hsu, Chang, and Li (2016) state that the increasing complexity of products variety can increase mental workload in manufacturing activities. These authors also mention that mental workload can improve product quality and guarantee the efficiency simultaneously. However, minimal research has been done for balancing the quality production and efficiency, which is based on the mental workload effect and complexity in manufacturing activities. Therefore, these authors proposed a mathematical model to formulate the multi-objective problem in an assembly line, where the genetic algorithm for problem solving due to the computational complexities was applied. Their results showed that by incorporating the impact of mental workload on performance may consider the rolled throughput yield (RTY) and efficiency balance when designing an assembly line.

Based on the previous backgrounds, it is declared that mental workload influences employees' health and performance. This chapter focuses on measure mental workload in middle and senior management from manufacturing companies in Tijuana, Mexico. Also, this chapter provides descriptive information on several characteristics of employees, their level of mental workload, as well as the effects it causes

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on them. Such characteristics include age, civil status, number of children, gender, years of experience, among others.

Effects of Mental Workload

As it was mentioned before, mental workload is presented continuously in activities from different industrial sectors. When these activities demand high levels of mental workload, several negative effects may be visible on employees. For instance, Pimenta et al. (2015) mention that mental workload can lead employees to suffer mental fatigue, mental health problems (i.e. chronic fatigue syndrome or depression), performance degradation, lack of attention in tasks, errors, and accidents. Similarly, several authors mention that high levels of mental workload may cause occupational stress on employees (Hong, Zhijian, & Baohua, 2003; Mohammadian et al., 2015), bad quality of life (Mohammadian et al., 2015), physical health problems (Babazono, Mino, Nagano, Tsuda, & Araki, 2005; Gholamreza, 2006; Lederer, Weltle, & Weber, 2001; Mohammadian et al., 2015; Stansfeld & Candy, 2006), occupational discomfort (Babazono et al., 2005; Lederer et al., 2001; Mohammadian et al., 2015; Stansfeld & Candy, 2006), anxiety (Babazono et al., 2005; Forcella et al., 2007; Maslach, Schaufeli, & Leiter, 2001; Mohammadian et al., 2015; Schaufeli & Greenglass, 2001; Unterbrink et al., 2008) and hypertension (Babazono et al., 2005; Forcella et al., 2007; Maslach et al., 2001; Mohammadian et al., 2015; Schaufeli & Greenglass, 2001; Unterbrink et al., 2008). Different authors have pointed out that both low and excessive mental workload levels result in poor operation performance of employees (Xiao et al., 2015; Zhao et al., 2016). Therefore, a medium mental workload level (55.73∼64.10 with the NASA-TLX) is appropriate.

Table 1 portrays a literature review summary of mental workload effects. It is relevant to notice that 19 negative effects are listed in Table 1, therefore, it is important that senior managers pay attention to the mental workload they assign to their employees.

Methods to Evaluate Mental Workload

There are several methods to evaluate mental workload. The following sections explain some of these methods.

NASA Task Load Index (NASA-TLX)

The NASA Tsk Load Index (NASA-TLX) is the most widely used method for measuring mental workload (Galy, Paxion, & Berthelon, 2018; Rizzo & Longo, 2017; Ruiz-Rabelo et al., 2015; Tubbs-Cooley, Mara, Carle, & Gurses, 2018). This method is a subjective validated workload assessment scale that was developed initially as a tool for subjective evaluation of individual workload in air traffic control, flight simulation, and vigilance, which has been increasingly applied to other sectors (Hart & Staveland, 1988; Ruiz-Rabelo et al., 2015; Tubbs-Cooley et al., 2018), such as nuclear energy, transportation, health care (Hart, 2006; Hart & Staveland, 1988; Hwang et al., 2008; Jacobson et al., 2011; Mazur et al., 2012; Tubbs-Cooley et al., 2018), transportation, cognitive psychology, and human computer interaction (Longo, 2012; Rizzo & Longo, 2017). It comprises six dimensions (mental demand, physical demand, time demand, performance, effort, and frustration), which are evaluated based on a 20-point scale ranging from 0 (very low) to 20 (very high) (Galy et al., 2018). These dimensions are also estimated through a paired comparison procedure. In this procedure, participants are required to decide, for

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each paired comparison (there are 15 paired comparisons among the 6 dimensions), which aspect out of the two contributes the most to mental workload during a task (Rizzo & Longo, 2017). This procedure provides an overall index of mental workload as well as the relative contributions of each dimension (Ruiz-Rabelo et al., 2015). The overall index is the sum of the relative contributions of each dimension, and it is intended to measure the total of the mental workload experienced by an individual during a specific time, event, or situation (Hart, 2006; Tubbs-Cooley et al., 2018). The weights w represent the number of preferences for each dimension (i.e. the number of times each dimension was chosen) in the 15 paired comparisons. Therefore, the preferences range is from 0 (not significant) to 5 (more significant than any other attribute). The final mental workload score is estimated as a weighted average, considering the subjective rating of each attribute d_i (for the 6 dimensions), and the corresponding weights w_i (Equation 1) (Rizzo & Longo, 2017).

Table 1. Literature review of mental workload effects (The Authors, 2019)

Reference	Effects of mental workload
(Pimenta et al., 2015)	Mental fatigue
(Pimenta et al., 2015)	Chronic fatigue syndrome
(Pimenta et al., 2015)	Depression
(Mohammadian et al., 2015; Pimenta et al., 2015)	Performance degradation
(Pimenta et al., 2015)	Lack of attention from tasks
(D'Addona et al., 2018; Pimenta et al., 2015)	Errors
(Pimenta et al., 2015)	Accidents
(Hong et al., 2003; Mohammadian et al., 2015)	Occupational stress
(Mohammadian et al., 2015)	Bad quality of life
(Babazono et al., 2005; Gholamreza, 2006; Lederer et al., 2001; Mohammadian et al., 2015; Stansfeld & Candy, 2006)	Physical health problems
(Lederer et al., 2001; Mohammadian et al., 2015)	Early retirement / abandonment of work
(Babazono et al., 2005; Lederer et al., 2001; Mohammadian et al., 2015; Stansfeld & Candy, 2006)	Occupational discomfort
(Babazono et al., 2005; Forcella et al., 2007; Maslach et al., 2001; Mohammadian et al., 2015; Schaufeli & Greenglass, 2001; Unterbrink et al., 2008)	Anxiety
(Babazono et al., 2005; Forcella et al., 2007; Maslach et al., 2001; Mohammadian et al., 2015; Schaufeli & Greenglass, 2001; Unterbrink et al., 2008)	Hypertension
(Babazono et al., 2005; Forcella et al., 2007; Maslach et al., 2001; Mohammadian et al., 2015; Schaufeli & Greenglass, 2001; Unterbrink et al., 2008)	Headache
(Babazono et al., 2005; Forcella et al., 2007; Maslach et al., 2001; Mohammadian et al., 2015; Schaufeli & Greenglass, 2001; Unterbrink et al., 2008)	Psychosomatic disorders
(Babazono et al., 2005; Forcella et al., 2007; Maslach et al., 2001; Mohammadian et al., 2015; Schaufeli & Greenglass, 2001; Unterbrink et al., 2008)	Cardiovascular diseases
(Hong et al., 2003; Mohammadian et al., 2015)	Lower quality of life
(Hong et al., 2003; Mohammadian et al., 2015)	Life expectancy

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$$NASA-TLX = \frac{1}{15}\sum_{1}^{6} d_i w_i \quad (1)$$

Stanton et al., (2018) point out that the NASA-TLX has several advantages and disadvantages; the advantages are the following:

1. The NASA-TLX provides a quick and simple technique for estimating operator workload.
2. The NASA-TLX sub-scales are generic, therefore, the technique can be applied to any domain.
3. The NASA-TLX has been tested thoroughly in the past and has also been the subject of several validation studies.
4. There is a software package from the NALSA-TLX, however, for those who cannot acquire the software, the method format is also available in a handwriting form.
5. This is probably the most widely used technique for estimating employee workload.
6. The NASA-TLX is a multi-dimensional approach for workload assessment.
7. Different studies have shown the NASA-TLX is better than the SWAT technique.
8. When post-trial is performed the approach is non-intrusive to primary task performance.
9. The NASA-TLX has demonstrated sensitivity to demand manipulations in numerous flight experiments.

Similarly, the disadvantages of this method are the following:

1. When it is performed on-line, the NASA-TLX can be intrusive to primary task performance.
2. When it is performed after the fact, participants may have forgotten high workload aspects of the task.
3. Workload ratings may be correlated with task performance i.e. subjects who performed poorly on the primary task may rate their workload as very high and vice versa.
4. The sub-scale weighting procedure is diligent and adds more time to the procedure.

Other Methods

Stanton et al., (2018) mention that there are different methods to evaluate mental workload, such as Subjective Workload Assessment Technique (SWAT), and Subjective Workload Dominance Technique (SWORD), to mention few. Also, these authors point out the corresponding advantages and disadvantages. Table 2 provides a summarize about the other methods that can be used to evaluate mental workload, as well as their advantages and disadvantages.

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Table 2. Methods to evaluate mental workload and their advantages and disadvantages (Stanton et al., 2018)

Method	Advantages	Disadvantages
Modified Cooper Harper Scales (MCH)	1. It is easy and quick to use, and it requires minimal training. 2. Non-intrusive measure of workload. 3. It has been widely used to measure workload in a variety of domains. 4. It is accessible, unobtrusive, easily to performed and easily transferable. 5. High face validity. 7. It has been successfully applied to workload assessment in different flight simulation experiments incorporating demand manipulations. 8. The data obtained when using uni-dimensional tools is simpler to analyze than when using multi-dimensional tools.	1. It is a dated approach. 2. It was developed originally to rate controllability of aircraft. 3. It is limited to manual control tasks. 4. Data is collected post-trial, which is a subject for different problems, such as correlation with performance. Also, participants are restricted when reporting past mental events. 5. It is uni-dimensional.
Subjective Workload Assessment Technique (SWAT)	1. It offers a quick, simple, and low-cost procedure for estimating participant mental workload. 2. Its dim can be applied to any domain. 3. It is one of the most widely used and well-known subjective workload assessment technique available. 4. The Pro-SWAT variation allows the technique to be used to predict operator workload. 5. It is a multidimensional approach to workload assessment. 6. This technique has demonstrated a sensitivity to demand manipulations in flight environments.	1. It can be intrusive if it is performed on-line. 2. Different validation studies have reported that the NASA-TLX is superior to SWAT in terms of sensitivity, particularly for low mental workloads. 3. It has been constantly criticized for having a low sensitivity to mental workloads. 4. It is time consuming and diligent. 5. The post-trial collection of mental workload data has several associated disadvantages, including a potential correlation between mental workload ratings and task performance, and participants may be forgetting different parts of a task when workload was especially low.
Subjective Workload Dominance Technique (SWORD)	1. It offers a quick, simple use, and a low-cost approach for assessing mental workload. 2. It is especially useful when comparing the mental workload imposed by different tasks of devices. One potential evaluation would be for the evaluation of the mental workload imposed by different design concepts. 3. It is performed by post-trial, therefore is non-intrusive to task performance. 4. It has high face validity. 5. It has been demonstrated to have a sensitivity to mental workload variations.	1. The post-trial collection of mental workload data has several associated disadvantages, including a potential correlation between mental workload, ratings, and task performance, and participants may be forgetting different parts of a task when workload was especially low. 2. Only limited validation evidence is available in the literature review. 3. It has not been as widely used as other mental workload assessment techniques, such as SWAT and NASA-TLX. 4. The SWORD output does not offer a rating for participant mental workload as it is; only a rating list of what type of tasks or devices imposed greater mental workload than others.
Dra Workload Scales (Draws)	1. It offers a quick, simple use, and low-cost approach for assessing mental workload. 2. Data is obtained on-line during task performance, therefore, the problems of collecting posttrial mental workload data is discarded. 3. It has high face validity. 4. Sensitivity to workload variation has been demonstrated. 5. The workload dimensions used in the DRAWS technique were validated in several studies during the development of the technique. 6. Although its application was developed for the aviation domain, the workload dimensions are generic, allowing the technique to be applied in any domain.	1. It is intrusive to primary task performance. 2. There are limited applications reported in the literature review. 3. The workload ratings may correlate highly with task performance when it is implemented. 4. There is limited validation evidence available in the literature review. 5. The technique requires further validation.
Malvern Capacity Estimate (MACE)	1. It offers a quick, simple, and low-cost approach for assessing participant spare capacity. 2. The output is potentially useful, indicating when operators are experiencing mental overload and mental underload. 3. It provides a direct measure of operator capacity. 4. On-line implementation removes the problems associated with the collection of mental workloads posttrial (i.e. correlation with performance, forgetting certain parts of a task, etc.).	1. The technique is totally dependent on the participant's ability to estimate their remaining capacity. 2. The technique remains largely unvalidated. 3. The reliability and accuracy of this technique is questionable. 4. The MACE technique has only been used in simulators; it would be an intrusive technique if it is applied on-line during task performance in the 'real-world'.

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Table 2. Continued

Method	Advantages	Disadvantages
Workload Profile Technique	1. The technique is based on sound underpinning theory (Multiple Resource Theory). 2. It is quick and easy to use, requiring minimal analytical training. 3. It also offers an overall task workload rating; the output also provides a workload rating for each of the eight workload dimensions. 4. It is a multi-dimensional mental workload assessment technique. 5. As the technique is applied post-trial, it can be applied in real-world settings.	1. It may be difficult for participants to rate workload on a scale of 0 to 1. 2. A more sophisticated scale may be required in order to obtain a more appropriate workload measure. 3. The post-trial collection of mental workload data has several associated disadvantages, including a potential correlation between mental workload ratings and task performance, as well as participants may be 'forgetting' different parts of a task when workload was especially low. 4. There is minimal evidence of the actual usage of the technique. 5. There is limited validation evidence associated with the technique. 6. Participants require an understanding of mental workload and multiple theory resources. 7. The dimensions used by the technique may not be fully understood by participants with limited experience on psychology and human factors. In a study comparing the NASATLX, SWAT, and workload profile techniques, it was found that there were problems with some of the participants understanding the different dimensions used in the workload profile technique.
Bedford Scales	1. It is very quick and easy to use, requiring minimal analytical training. 2. Its scale is generic; therefore, the technique can be easily applied in different domains. 3. It may be useful when it is applied along with other mental workload assessment techniques. 4. It has low intrusiveness.	1. There is minimal evidence of actual implementation of this technique. 2. There is limited validation evidence associated with the technique. 3. It offers limited output. 4. Participants are not efficient at reporting mental events 'after the fact.'
Instantaneous Self-Assessment (ISA)	1. ISA is a simple technique that it is easy to learn and use. 2. The output allows a workload profile for a task under analysis to be constructed. 3. ISA is very quick on its application as data collection occurs during the trial. 4. It has been used extensively in several domains. 5. It does not require too much resources. 6. While the technique is obtrusive to the primary task, it is probably the least intrusive of the on-line workload assessment techniques. 7. It is a low-cost technique.	1. ISA is intrusive to primary task performance. 2. There is a limited validation evidence associated with the technique. 3. ISA is a simplistic technique, offering only a limited assessment of operator workload. 4. Participants are not very efficient at reporting mental events.
Cognitive Task Load Analysis (CTLA)	1. The technique is based on sound theoretical underpinning. 2. It can be used during the design of systems and processes to highlight tasks or scenarios that impose especially high cognitive task demands. 3. It seems to be suitable for analyzing control room type of tasks or scenarios.	1. The technique seems to be quite complex. 2. This technique would be very time consuming when it is applied. 3. A high-level of training would be required. 4. There is no guidance on the rating of cognitive task load; it would be difficult to give a task load a numerical rating based on the underlying model. 5. Initial data collection would be time consuming. 6. The CTLA technique requires validation. 7. Evidence of its implementation is limited.
Pro-Sword – Subjective Workload Dominance Technique	1. It is easy to learn and use. 2. It is non-intrusive. 3. It has high face validity. 4. SWORD has been demonstrated to have a sensitivity to workload variations. 5. It is very quick in its application.	1. Data is collected post-task. 2. SWORD is a dated approach to workload assessment. 3. Workload projections are more accurate when domain experts are involved. 4. Further validation is required. 5. The SWORD technique has not been as widely used as other workload assessment techniques, such as SWAT, MCH, and the NASA TLX.

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Table 2. Continued

Method	Advantages	Disadvantages
Primary and Secondary Task Performance Measures	1. When using a battery of mental workload assessment techniques for mental workload assessment, the data obtained can be crosschecked for reliability purposes. 2. Primary task performance measures offer a direct index of performance. 3. Primary task performance measures are particularly effective when measuring workload in tasks that are long in duration. 4. Primary task measures are also useful when measuring operator overload. 5. It requires no further effort besides the analyst to set up and record the data; as primary task performance is normally measured anyway. 6. Secondary task performance measures are effective at discarding tasks when no difference was observed while assessing performance alone. 7. Primary and secondary task performance measures are easy to use, as a computer typically records the required data.	1. Primary task performance measures isolated may not distinguish between different levels of workload; particularly minimal ones. Different operators may still achieve the same performance levels under completely different workload conditions. 2. It is suggested that primary task performance is not a reliable measure when it is used isolated. 3. Secondary task performance measures have been known to be only sensitive to gross changes in mental workload. 4. Secondary task performance measures are intrusive to primary task performance. 5. Considerable attention is required during the design and selection of the secondary task to be used. The analyst must confirm that the secondary task is having the same resources as the primary task. The secondary task must be carefully designed in order to be an appropriate measure of spare attentional capacity. 6. Extra work and resources are required in developing the secondary task performance measure. 7. The techniques are required to be implemented together to be effective. 8. Using primary and secondary task performance measures may be expensive, as simulators and computers are required.
Physiological Measures	1. Several physiological techniques have demonstrated a sensitivity to task demand variations. 2. When using physiological techniques, data is recorded continuously throughout task performance. 3. Physiological measurements can often be taken in a real-world setting, removing the need for a simulation of the task. 4. Advances in technology have resulted in an increased accuracy and sensitivity of the several physiological measurement tools. 5. Physiological measurement does not interfere with primary task performance.	1. The data is easily mistaken by foreign interference. 2. The equipment that is used to measure physiological responses is typically physically obtrusive. 3. The equipment is also typically expensive to be acquired, temperamental, and difficult to perform. 4. Physiological data is highly difficult to obtain and analyze. 5. In order to use physiological techniques effectively, the analyst(s) require a full understanding about physiological responses to workload. 6. It may be difficult to use certain equipment in the field i.e. brain and eye examination equipment.

METHODOLOGY

Instruments

Authors rely on the following instruments to perform the research on mental workload:

- **Computer equipment:** Laptop Toshiba Satellite C645d and Dell Inspiron 7567
- **Google forms**
- **Microsoft Excel®**

Method

The method presented in this chapter is divided into some phases. Figure 1 shows the different phases.

Phase 1: Contacting manufacturing companies. It is carried out in two ways: 1) students working in the manufacturing industry, and 2) the educational institution liaison office. In the first case, several students have a senior or middle job position, and/or interact with manufacturing employees who have these positions. Once students are contacted, they receive an explanation about the project and its objective, and if there are doubts, they are clarified. In the case of the liaison office, a similar explanation is given,

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and then, the office contact ex-students who have a senior or middle job position in the manufacturing industry. Once ex-students are contacted, the same explanation is given to them.

Phase 2: Applying the mental workload questionnaire. Once manufacturing companies are contacted and employees are willing to participate in this research, a mental workload questionnaire is applied to them. The original questionnaire is written in Spanish and it is applied online through a Google form. The questionnaire contains items, such as job position that the employee currently has, gender, age, and number of children he/she has, to mention few. The Appendix, Figure 17 shows the English version of the mental workload questionnaire.

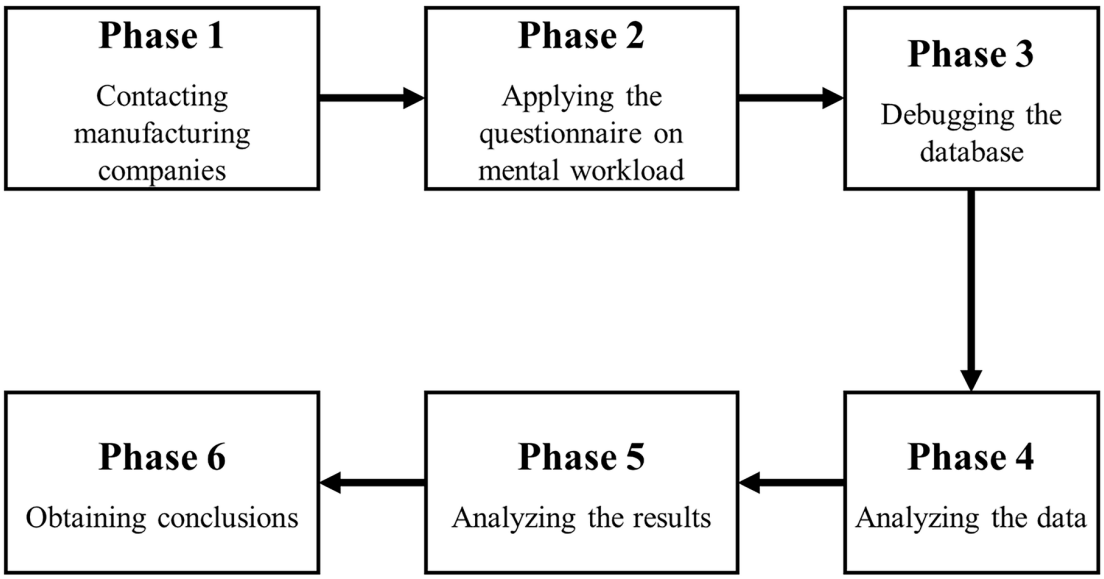
Phase 3: Debugging the database. Once employees answered the questionnaire, the information is registered automatically in an Excel® file, generating a database. From this information, some answers are removed from the database. For instance, if a participant answers that he/she is currently an operator, all the responds provided by this participant are removed from the database, since operator is not a senior or middle job position in manufacturing companies. The same happens if incoherent answers are given to other items.

Phase 4: Analyzing the data. Once the database is ready, the data is analyzed. This analysis is performed for all the companies in a general way. The analysis includes a comparison of the responses for each item with the mental workload level. This in order to determine the variables, and their levels, which can facilitate the increase or decrease of the mental workload. Mental workload is estimated by applying Equation (1).

Phase 5 Obtaining results. After the data analysis is finished, the results are obtained. These results are illustrated through graphs or tables for each item.

Phase 6: Analyzing results. Results are analyzed to stablish conclusions about the impact of each variable on the mental workload level in middle and senior management in manufacturing companies. As a summary, variables are arranged in a decreasing order according to their contribution level to mental workload.

Figure 1. Methodology applied to obtain mental workload on senior and middle managers in manufacturing companies



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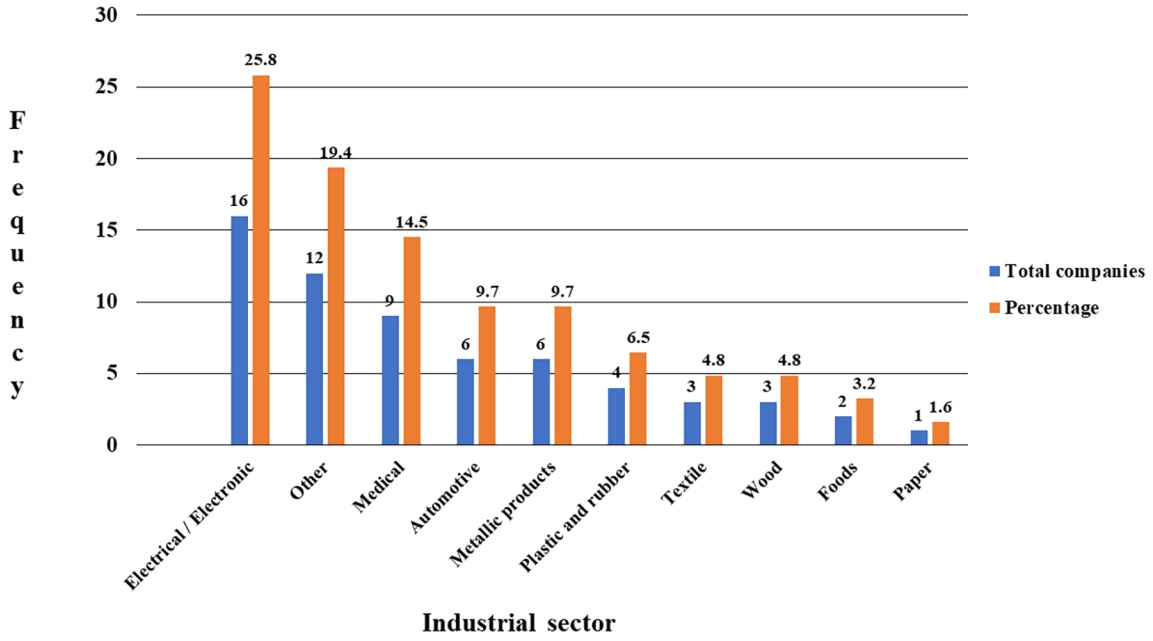
RESULTS

Phase 1

Results from phase 1 indicated that 62 companies were contacted. Figure 2 shows the distribution of these companies by industrial sector. It is important to notice that most of the companies belonged to the Electrical/Electronic sector, with 16 companies, representing 25.8% out of the 62 companies. On the other hand, only one company was in the Paper sector, this represents only 1.6% out of the 62 companies. Other sectors included Automotive, Medical, Food, Textile, Wood, Metallic products, Plastic and rubber, and Other.

Figure 2. Distribution of the surveyed companies by industrial sector



Phase 2

From the 62 manufacturing companies, 193 employees belonging to the middle and senior management were surveyed. The company with most surveyed employees was Company 53, with 29 employees, which represents 15.03% of the 193 surveyed employees. Most of the companies (39, i.e. 62.9%) contributed with only 1 employee to the research. One employee represents 0.52% of the total participants. Figure 3 presents the number of surveyed employees by company.

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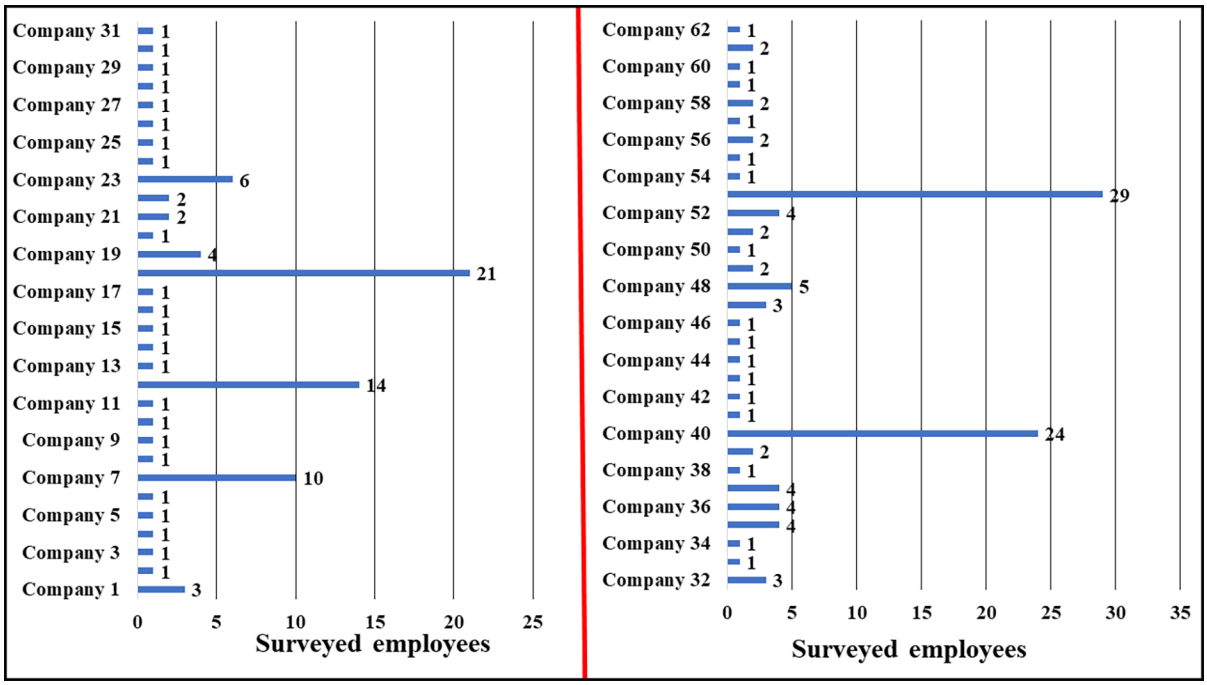
Figure 3. Surveyed employees by company



Phase 3

From the debugging of the database, it was obtained that the 62 originally surveyed companies, only 55 companies continued towards the final analysis of mental workload. Company 6, Company 16, Company 21, Company 26, Company 39, Company 51, and Company 57 were discarded from the database due to incorrect answers, such as omission of the company's name, the job position does not belong to middle and senior management, or that the company did not belong to the manufacturing field.

Specifically, from the 193 surveyed employees, only the data of 167 employees were acceptable in the database for further analysis.

Final Results

Mental Workload According to Gender

From the 167 surveyed employees, 99 were men while 68 were women. In both, mental demand was the dimension that impacted the most on mental workload, with values of 60.6 and 57.9 in men and women respectively. The second dimension that impacted the most on mental workload level was the time demand, with a value of 37 in men and 38.1 in women. Figure 4 shows the impact on mental workload level of the six dimensions, both in men and women. The average mental workload level for men was 65.1, whereas for women was 66.4. Figure 5 displays these results.

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Figure 4. Impact of the six dimensions on the mental workload level in men and women

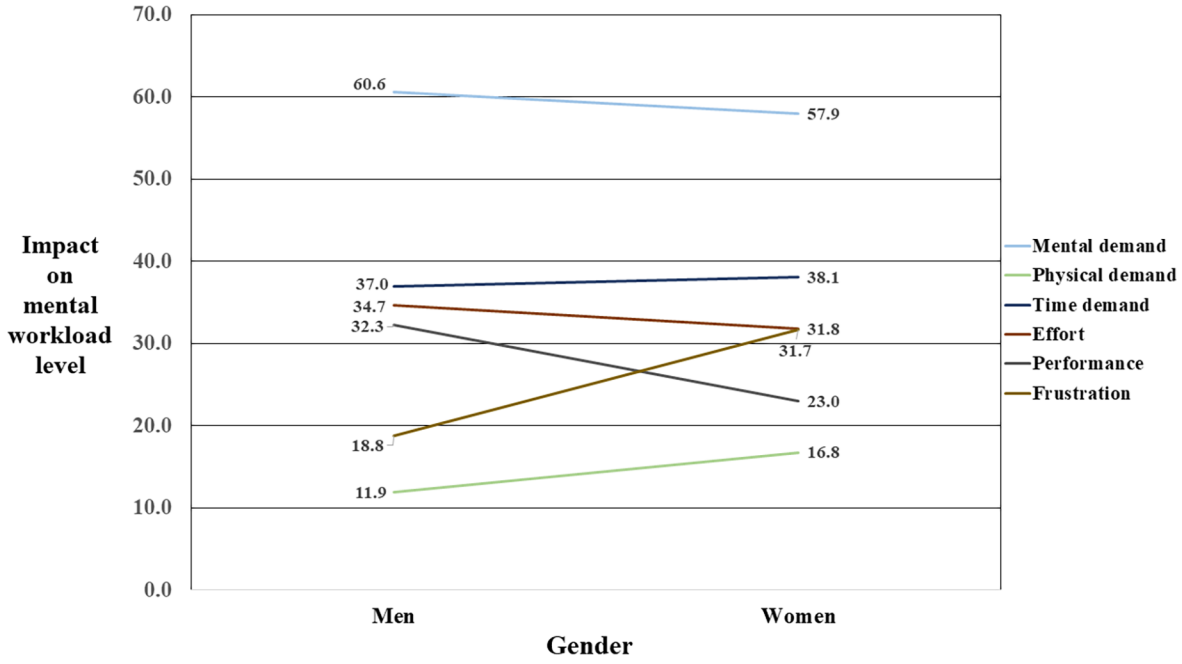
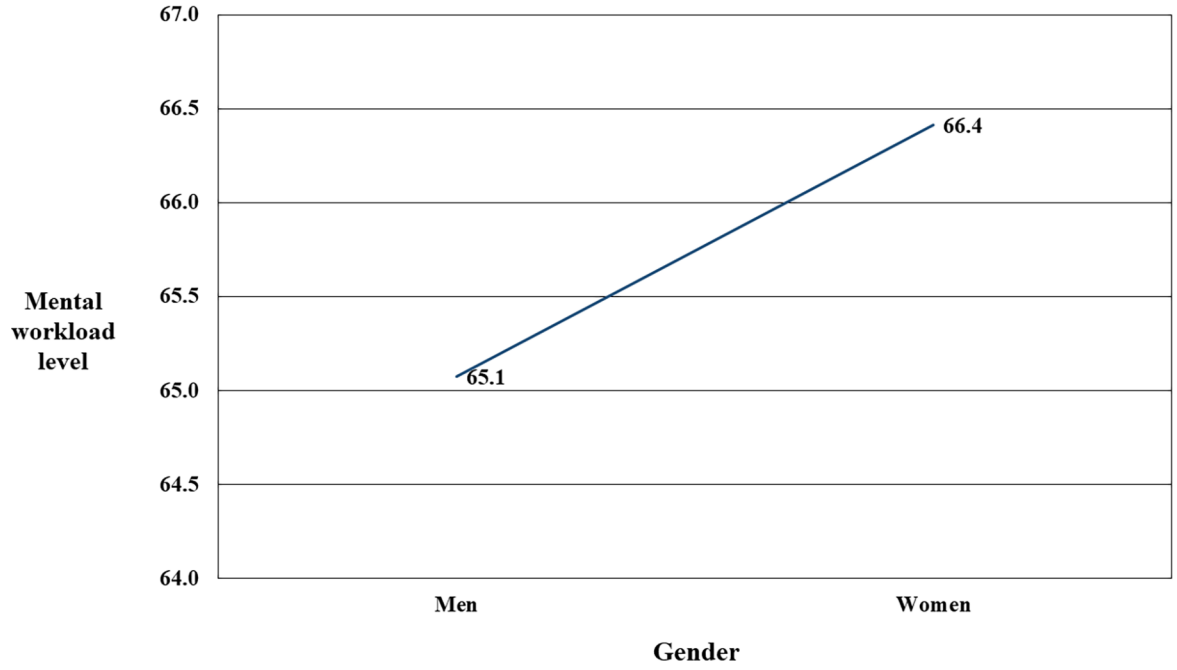


Figure 5. Mental workload level in men and women



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Mental Workload According to Age Range

As in the case of mental workload by gender, mental demand was the dimension that more impacted on the mental workload by age range, followed by effort and time demand. Again, the dimension of physical demand was the dimension that has the lowest impact on mental workload. Figure 6 shows the impact on mental workload of the six dimensions according to the age range. Results of mental workload level according to the age range indicated that employees between 18-20 years old had the lowest level of mental workload with a value of 55.1. However, from the 21-25 age range to the range of 36-40 years old, results indicated that there is an increasing trend on the mental workload level, being employees in this last age range who presented the highest mental workload level with a value of 71.1. From employees between 41 and 60 years old, mental workload level varied from 61.7 to 64.6. Figure 7 shows these results.

Mental Workload According to Civil Status

Results of mental workload based on the civil status from surveyed employees showed that the dimension of mental demand was the one that impacted the most on the general mental workload level, followed by the dimensions of time demand and effort. On the other hand, dimensions of physical demand and frustration had the lowest impact on the general level of mental workload. Figure 8 presents the impact on mental workload of the six dimensions according to civil status.

Regarding the mental workload level, results indicated that married employees had the highest one, with a value of 66.9, whereas employees in free union had the lowest mental workload level, with a value of 63.2. Figure 9 shows the results of mental workload level according to civil status.

Figure 6. Impact of the six dimensions on the mental workload level according to age range

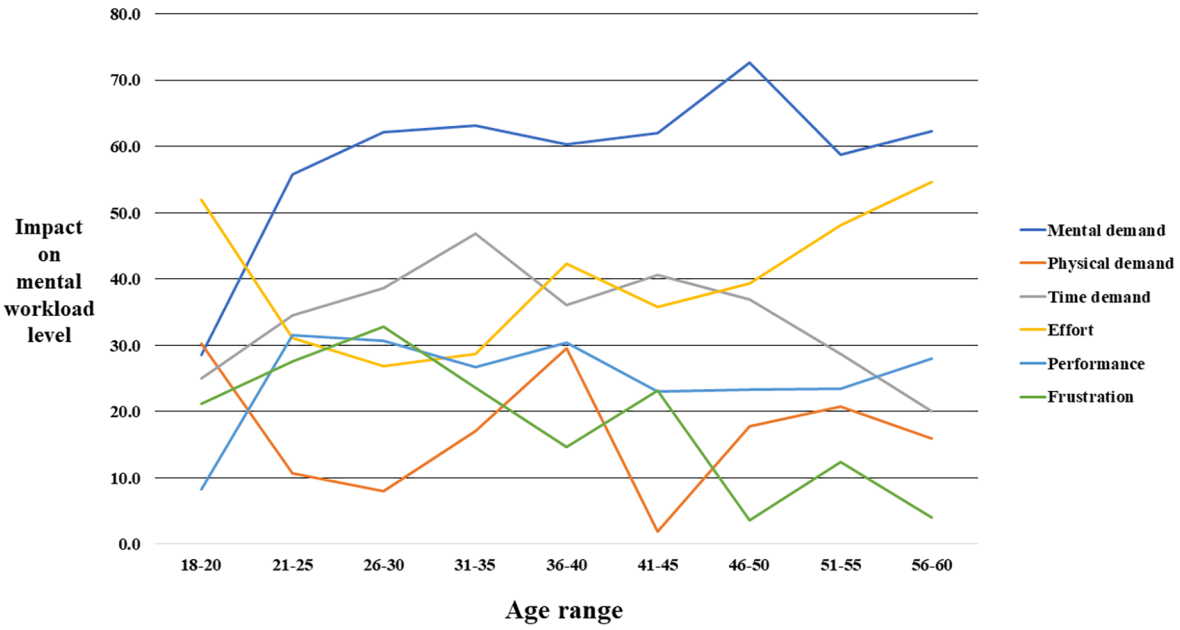

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Figure 7. Mental workload level according to age range

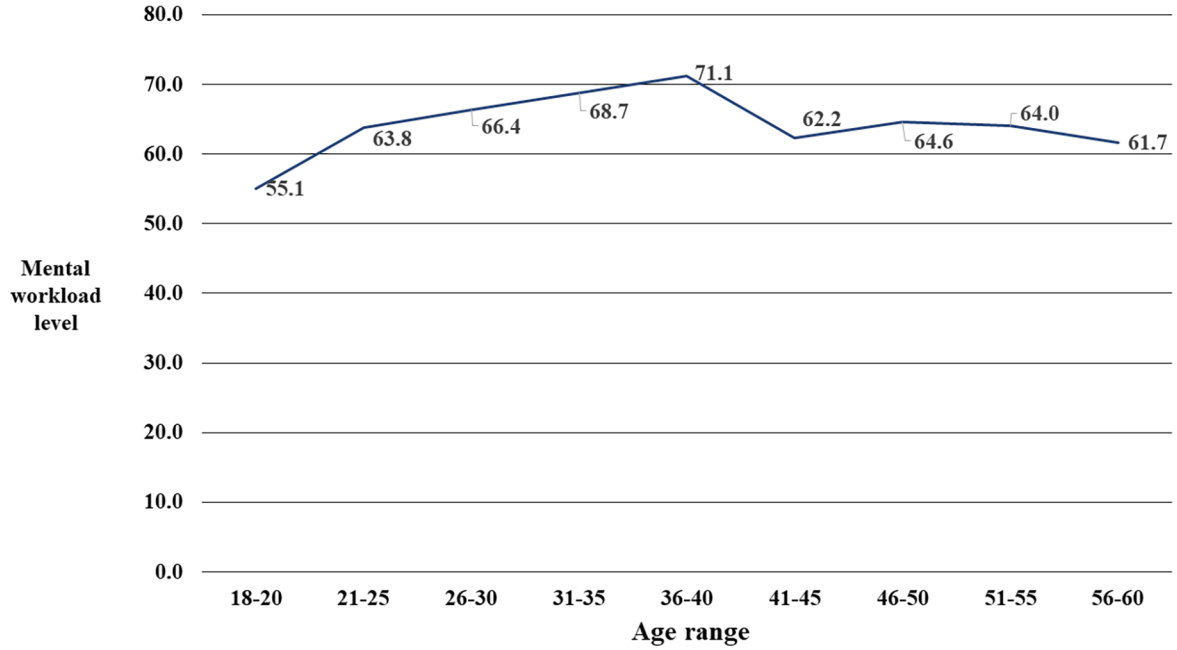

Figure 8. Impact of the six dimensions on the mental workload level according to civil status

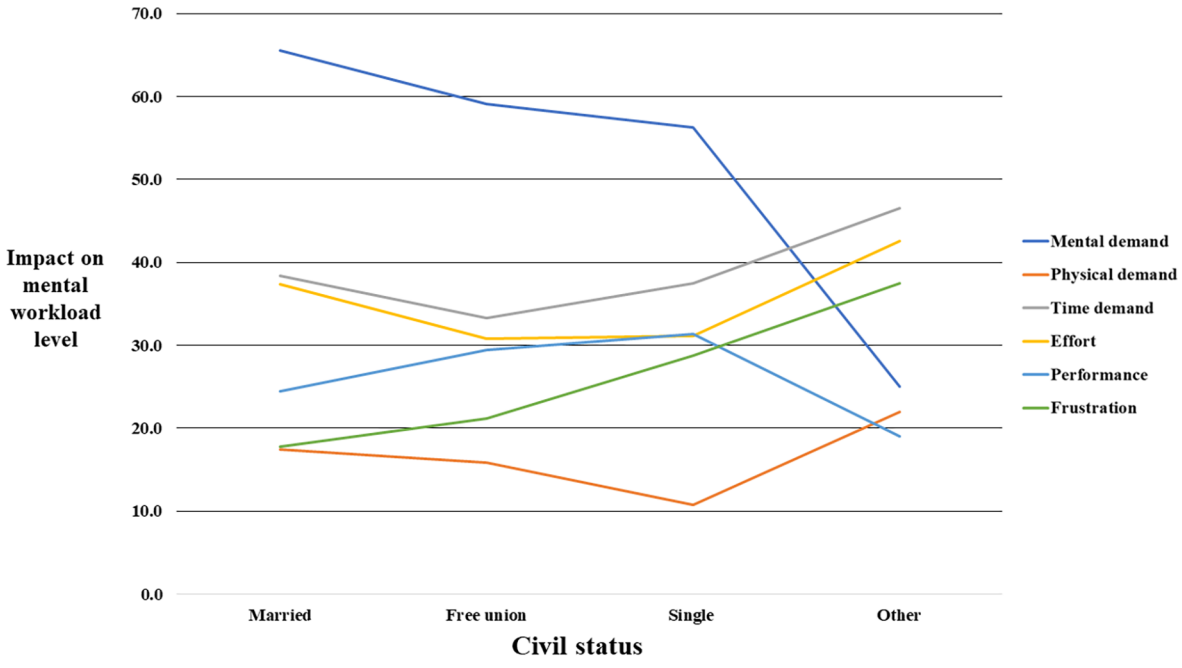

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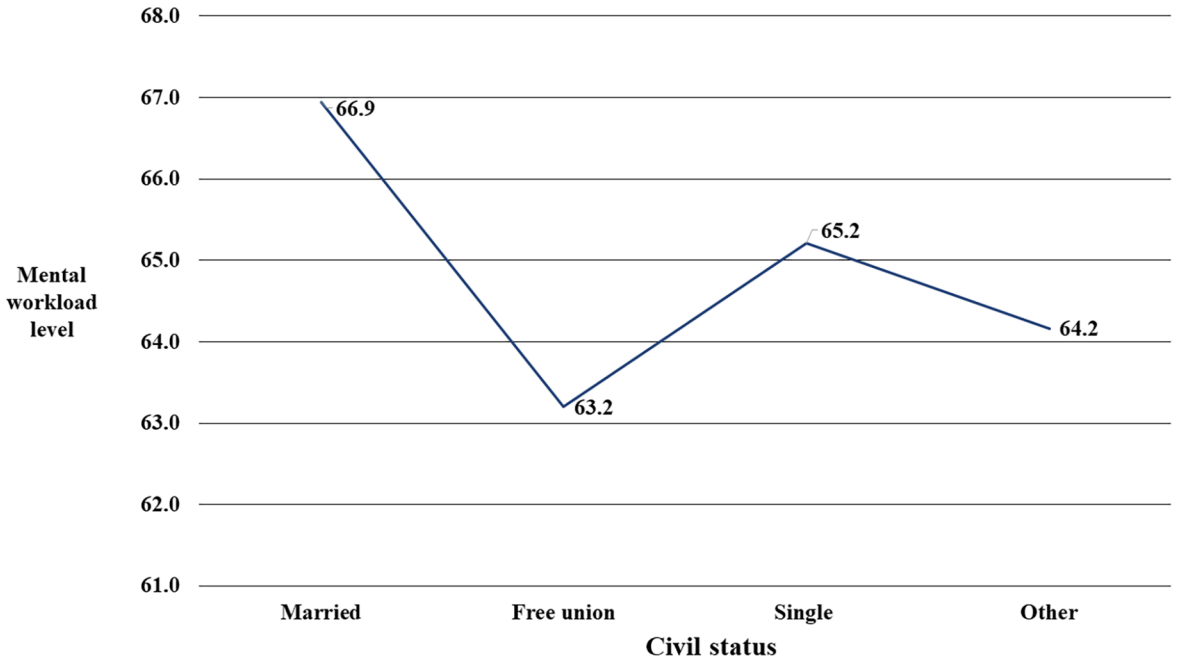
Figure 9. Mental workload level according to civil status



Mental Workload According to Number of Children

Results from mental workload, according to the number of children that employees have, indicated that the dimension of frustration had the lowest impact on the mental workload level, since for employees with ˃ 4 children, this dimension had a value of zero. The second dimension with the lowest impact on mental workload was the effort. On the other hand, it is repeated that the dimension of mental demand had the highest impact on the mental workload, followed by the effort and time demand. Figure 10 shows the impact of the six dimensions on the mental workload level according to the number of children. Similarly, Figure 11 presents the general mental workload level of surveyed employees according to the number of children they have. Notice that the employees with only one child had the lowest mental workload level, with a value of 61.4, whereas employees with 3-4 children had the highest mental workload level with a value of 61.4. Employees with no children had a medium level of mental workload, with a value of 65.8.

Mental Workload According to Years of Experience

Once again, results indicated that mental demand was the dimension that contributed the most to the mental workload level, this time according to years of experience. Effort and time demand were the other two dimensions that contributed the most to the mental workload level. On the other hand, frustration, physical demand, and performance had the lowest impact on the mental workload level. These results are shown in Figure 12. Regarding the mental workload level, employees between ˃ 25-30 years of experience had the lowest level of mental workload, with a value of 55.4, whereas employees between ˃ 30-35 had the highest mental workload level, with a value of 76. Figure 13 shows all the results of mental workload level according to the years of experience.

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Figure 10. Impact of the six dimensions on the mental workload level according to number of children

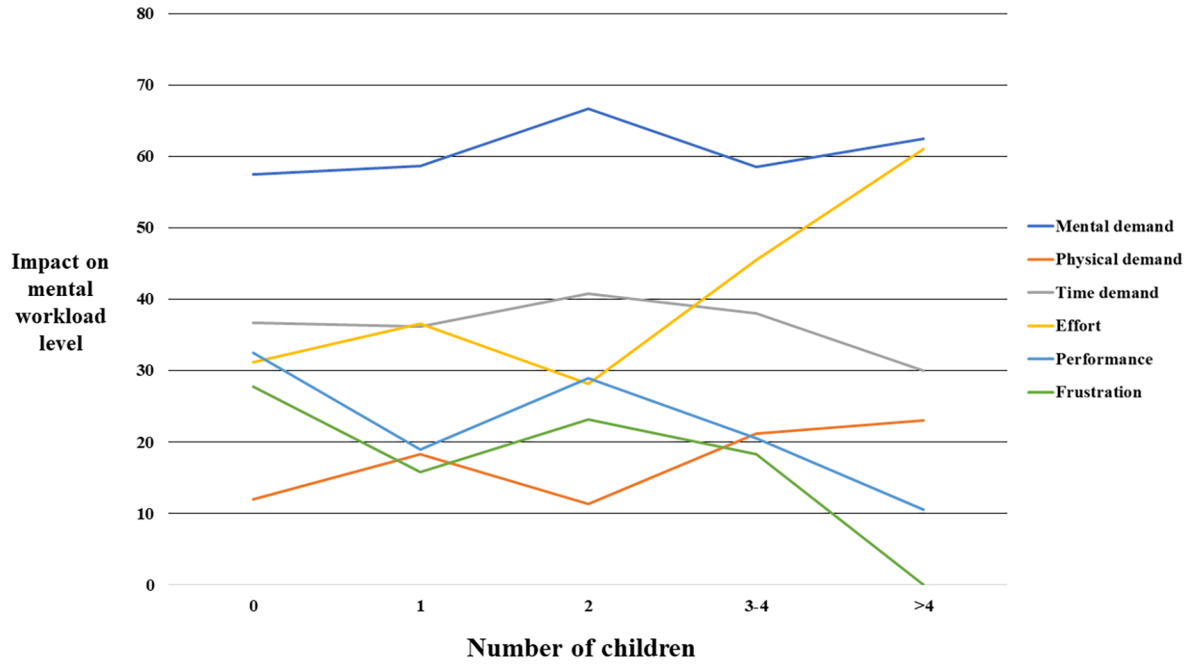

Figure 11. Mental workload level according to number of children

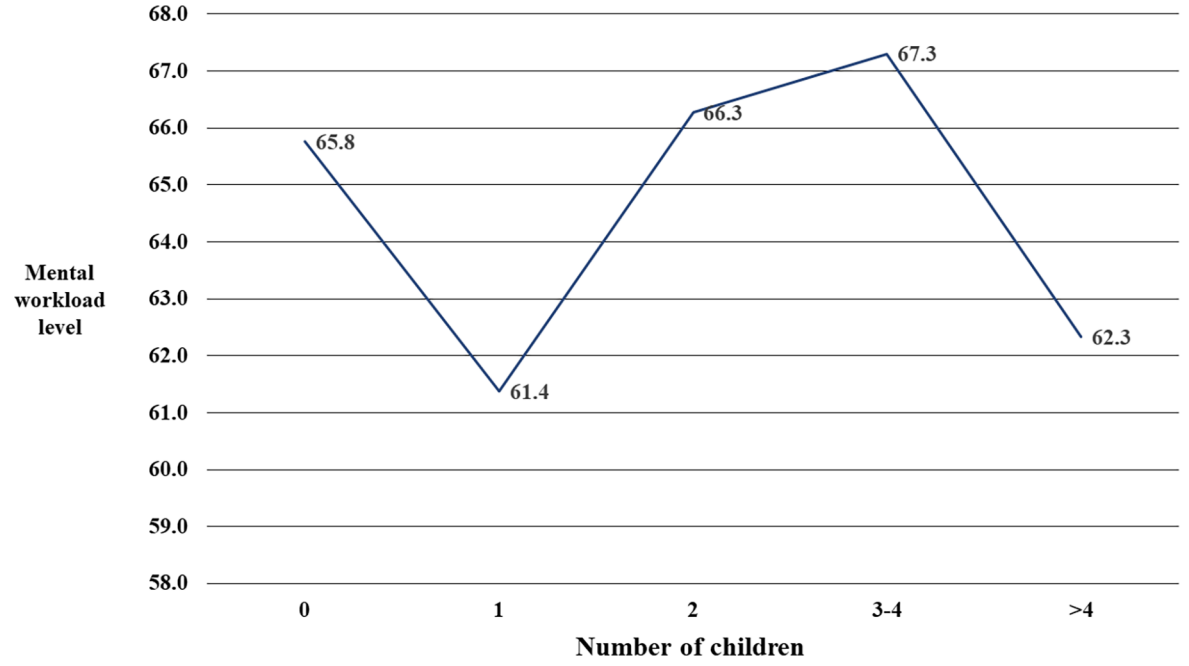

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Figure 12. Impact of the six dimensions on the mental workload level according to years of experience

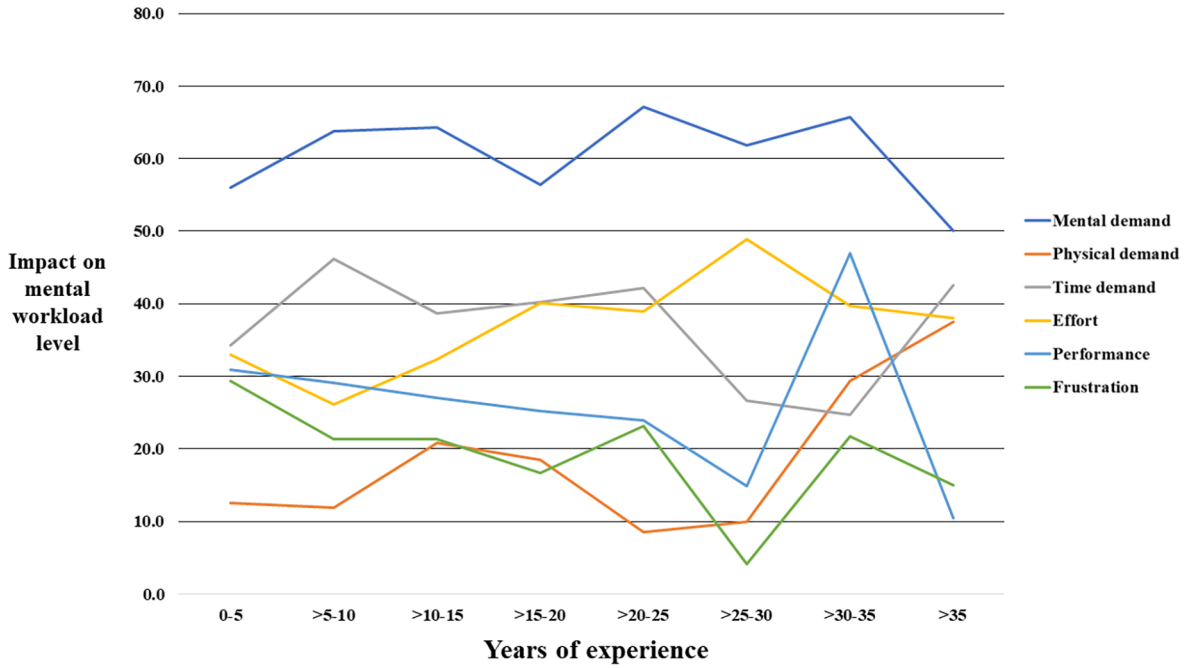
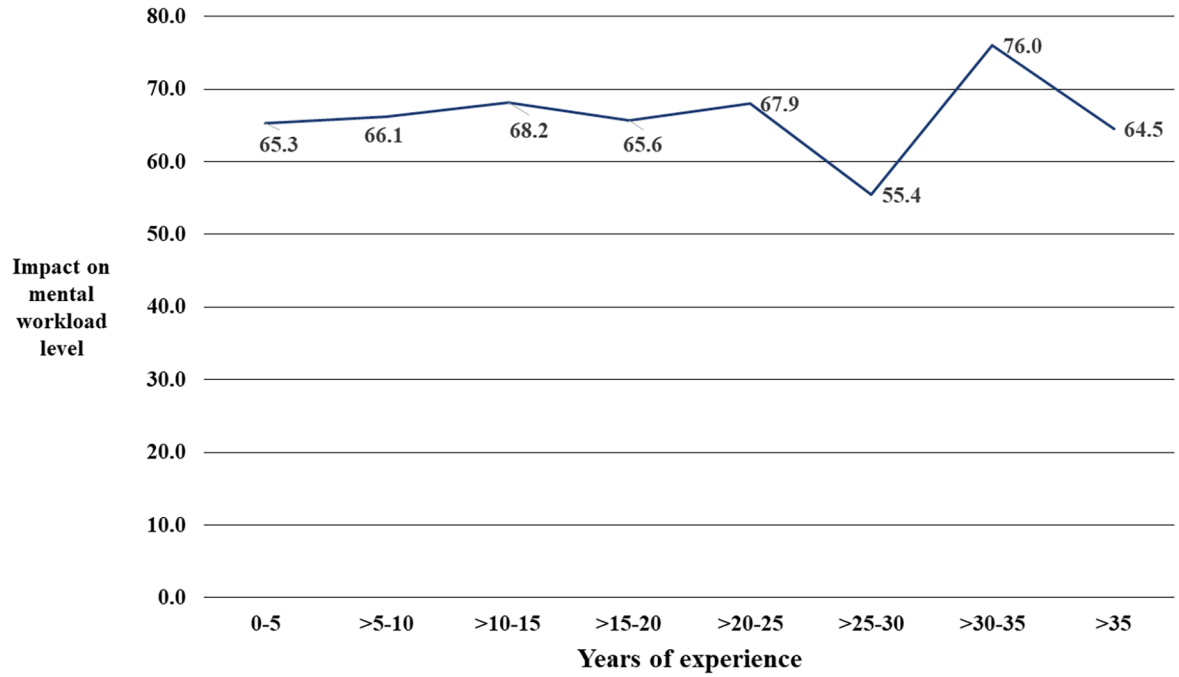


Figure 13. Mental workload level according to years of experience



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Mental Workload According to Worked Hours per Week

As in all other results, mental demand was the dimension that contributed the most to the mental workload according to the hours employees work per week. The other two dimensions that contributed the most to the mental workload level related to the worked hours per week, were time demand and performance. The lowest impact on mental workload was due to the dimensions from physical demand, frustration, and effort; Figure 14 shows these results. Regarding the mental workload level, employees that work between ˃ 30-35 hours per week had the lowest level of mental workload, with a value of 62.4. On the other hand, employees that work between ˃ 25-30 hours per week had the highest level of mental workload, with a value of 73. Figure15 displays the level of mental workload according to the worked hours per week. Notice that in these results, as in the other ones, there is no trend that indicates that the mental workload level increases according to the value of a specific variable.

Effects of Mental Workload

Regarding the mental workload effects, results indicated that employees have suffered from stress, headache, physical and mental fatigue, irritability, depression, work errors, loss of memory, social problems, and increment on body weight. The most frequent effects were stress and mental fatigue, whereas the less frequent effects were social problems, depression, and loss of memory. Figure 16 shows these effects and their frequency.

Figure 14. Impact of the six dimensions on the mental workload level according to the worked hours per week

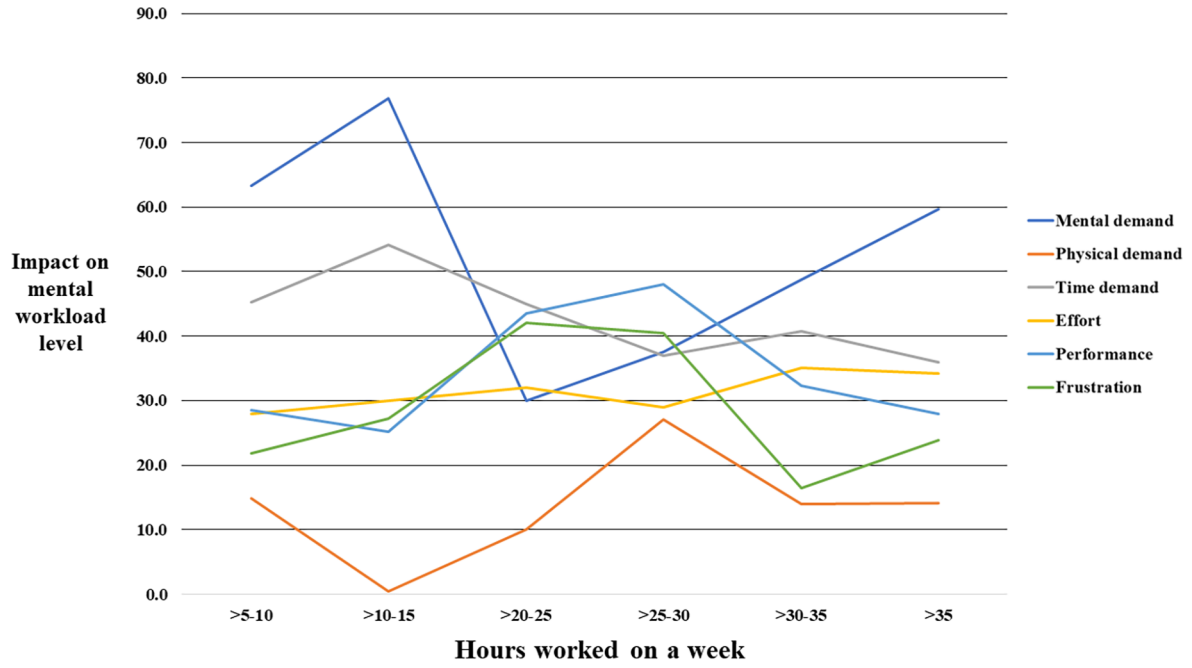

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Figure 15. Mental workload level according to the worked hours per week

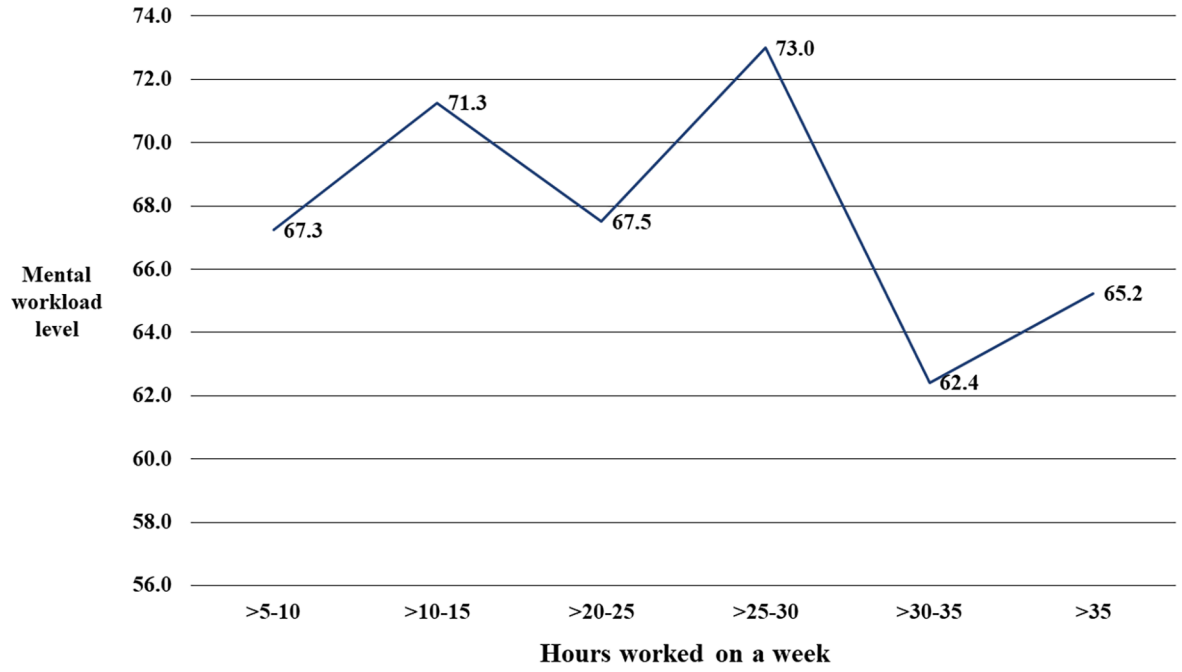
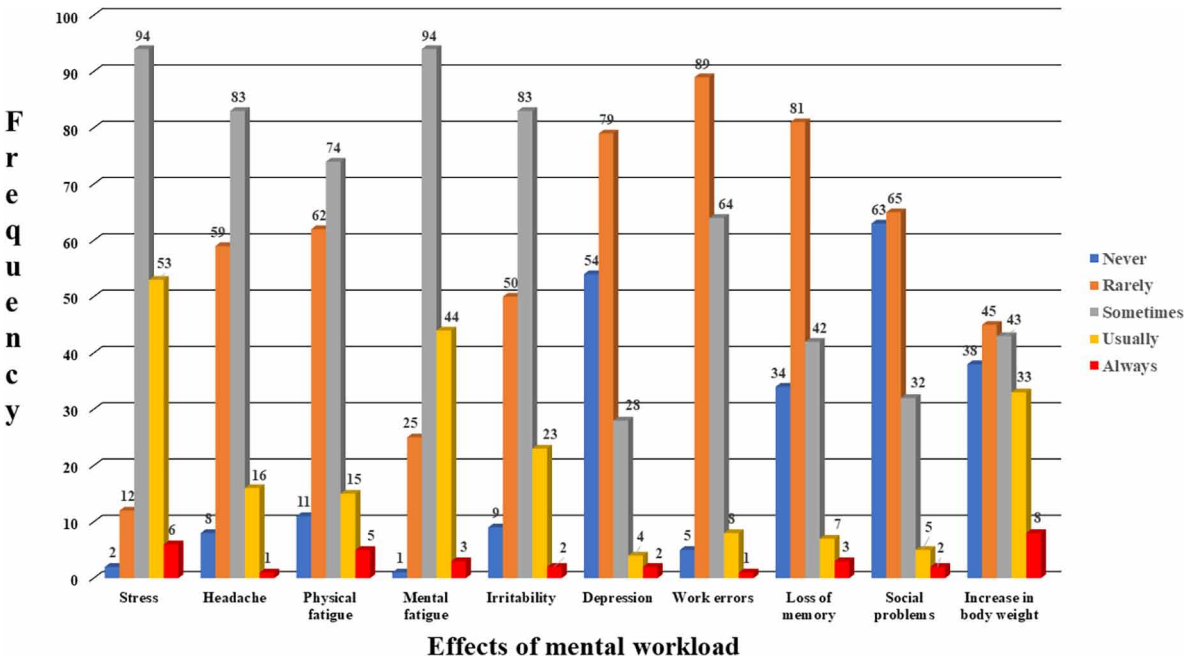


Figure 16. Effects of mental workload and their frequency



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FUTURE WORK

As a matter of fact, while considering the present research, including not only the results, but also the data, there is an opportunity to perform a deeper investigation on the causes and effects of the mental workload. Therefore, it is suggested to propose specific hypotheses and create a hypothetical causal model. Consequently, performing a statistical analysis through a structural equation modelling (SEM) will help obtain more precise results concerning the effects of age range, civil status, number of children, years of experience, and worked hours per week over the mental workload level of middle and senior management employees in manufacturing companies. Similarly, future research will help to know the mental workload effects and their significance on this type of employees. Specifically, such effects may include those presented in Figure 16, i.e., stress, mental fatigue, headache, depression, just to mention few. This future research will allow to apply statistical tools to acknowledge concretely if there is a relationship among the variables analyzed in this chapter.

CONCLUSION

Based on the results previously presented, following conclusions are established about the six dimensions from mental demand:

- Mental demand is the dimension that contribute the most to the mental workload level in middle and senior management employees in manufacturing companies.
- Temporal demand and effort are the second and third dimensions that contribute the most to the mental workload level in the mentioned employees.
- On the other hand, physical demand is the dimension that contribute the least to the mental workload level in middle and senior management employees in manufacturing companies.
- Similarly, frustration level and performance are the second and third dimension that contribute the least to their mental workload level.

These conclusions lead a general conclusion, which is the following:

- Middle and senior management employees in manufacturing companies are exposed to high mental demand tasks, which is not a physical demand, as they feel pressured by the time, consequently, it leads them to maximize their effort to finish the tasks on time. Despite this, they meet the required expectations and feel satisfied with their performance.

Similarly, results lead to the following conclusions regarding the mental workload level:

- There is no significant different between the mental workload level in men and women.
- There is no relationship between the mental workload level and the age of the employees.
- There is no relationship between the mental workload level and the civil status of the employees.
- There is no relationship between the mental workload level and the number of children employees have.

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- There is no relationship between the mental workload level and the years of experience employees have.
- There is no relationship between the mental workload level and the worked hours per week employees have.

As it can be seen, results of the mental workload level varied from 55.1 to 76.0. Considering that Xiao et al. (2015) mention that there is a better work ability when mental workload level varies from 55.73 to 64.10, the mental workload level of middle and senior management employees in manufacturing companies are out of this range, which may cause some effects, such as mental fatigue, stress, headache, just to mention few, as it is presented in Figure 16.

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KEY TERMS AND DEFINITIONS

Effort: It refers to the degree in which a worker must expend energy, either physical or mental, to achieve the objectives of the company.

Frustration Level: It refers to the level at which employees feel insecure, dissatisfied, stressed out, and unmotivated when they perform a task.

Mental Demand: It refers to the amount of work where the execution of a specific task requires that employees perform mental processes, such as thinking, deciding, calculating, remembering, analyzing, searching, observing, to mention few.

Mental Workload: It refers to the resources demanded by a specific task. It may be influenced by effort, frustration, mental demand, physical demand, performance, and temporal demand.

NASA-TLX: It is the most widely used method to evaluate the mental workload in a specific task. It is based on six dimensions: effort, frustration level, mental demand, physical demand, performance, and temporal demand

Physical Demand: It refers to the physical effort required by a specific task, i.e. pushing, pulling, controlling, activating, and turning.

Temporal Demand: It refers to the time pressure that employees feel when performing a specific task.

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APPENDIX: MENTAL WORKLOAD QUESTIONNAIRE

Figure 17. Mental workload questionnaire

EVALUATION OF THE MENTAL WORKLOAD AND ITS EFFECTS IN MIDDLE AND SENIOR MANAGEMENT EMPLOYEES FROM MANUFACTURING COMPANIES

SECTION I. PERSONAL INFORMATION

Name and signature: _____

E-mail: _____

Company where you work _____

Current job position: _____

Date, City, State: _____

SECTION II. DESCRIPTIVE DATA

Instructions: Carefully read each question and select the option that best suits your reality.

1. Gender*
- ◯ Male
- ◯ Female

2. Age*_____

3. Civil status*
- ◯ Single
- ◯ Married
- ◯ Free union
- ◯ Other

4. Number of children*
- ◯ 0
- ◯ 1
- ◯ 2
- ◯ 3-4
- ◯ >4

5. Sector of the manufacturing industry where you work*
- ◯ Automotive
- ◯ Medical
- ◯ Electrical/Electronic
- ◯ Food
- ◯ Textile
- ◯ Wood
- ◯ Paper
- ◯ Chemistry
- ◯ Plastic and rubber
- ◯ Metallic products
- ◯ Computer equipment, ICTs
- ◯ Other

6. Years of experience in the manufacturing industry*
- ◯ 0-5
- ◯ >5-10
- ◯ >10-15
- ◯ >15-20
- ◯ >20-25
- ◯ >25-30
- ◯ >30-35
- ◯ >35

7. Number of worked hours per week*
- ◯ 0-5
- ◯ >5-10
- ◯ >10-15
- ◯ >15-20
- ◯ >20-25
- ◯ >25-30
- ◯ >30-35
- ◯ >35

SECTION III. EVALUATION OF MENTAL WORKLOAD WITH THE NASA-TLX METHOD

Instructions: Next, dimensions and scales that the NASA-TLX method uses to measure the mental workload are mentioned. Please select, for each dimension, the value that best represents your work, where 1 is Low and 20 is High*.

Dimension	Scale																			
Mental demand: How much mental demand and perceptual activity is required to perform your work (for example, thinking, deciding, calculating, remembering, searching, etc.)? 1 = Low, 20 = High	1																			20
Physical activity: From 1 to 20, how much physical activity is required, for example pushing, pulling, turning, controlling, activating, etc., to carry out their work? 1 = Low, 20 = High	1																			20
Temporal demand: From 1 to 20, how much time pressure do you feel due to the speed or pace at which tasks or task elements occur? 1 = Low, 20 = High	1																			20
Effort: From 1 to 20, how hard do you have to work (mentally and physically) to achieve your level of performance? 1 = Low, 20 = High	1																			20
Performance: From 1 to 20, how satisfied are you with your performance in achieving your objectives? 1 = Good, 20 = Poor	1																			20
Frustration level: From 1 to 20, how insecure, discouraged, irritated, stressed and upset you feel while performing your tasks? 1 = Low, 20 = High	1																			20

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Chapter 69
Work Stress and Psychosocial Factors in the Manufacturing Industry: A Literature Review

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ABSTRACT

Companies are in constant search of greater productivity and better use of resources; however, they have neglected the human being. In this regard, it is important to analyze the presence of the psychosocial factors to which workers are exposed at all levels. These factors exert both a positive and a negative influence and indeed turn into a risk when they are not in balance with worker capabilities. This literature review aims to provide a comprehensive understanding of the psychosocial factors present in the manufacturing industries. The methodology consisted of conducting a search in two databases in addition to government pages. A combination of keywords was used for the search, and each publication was classified according to the factors analyzed, the type of evaluation, and the area of application. Out of all 2,468 publications found, eight were selected. Finally, work-related psychosocial factors were found to be the most analyzed.

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INTRODUCTION

Currently, companies are looking for a better use of resources in order to increase their productivity. However, they are neglecting the most important resource which is the human element. As years go by, high market competitiveness and globalization have caused changes in the work environment, which have resulted in greater demands on workers. Such demands are placed by the need to execute more complex tasks in stressful work environments, with a high mental workload, and in the face of harassment and work violence among other factors. Such conditions are known as psychosocial work factors, and their importance has begun to be recognized throughout organizations because of their impact on the performance of workers and companies. However, the study and evaluation of such factors involve challenges that countries must recognize in order to face and evaluate them, and to develop strategies for their better management and prevention. Indeed, psychosocial factors are highly complex and, thus, difficult to understand as they depend on workers' perceptions and include aspects that range from individual characteristics to the social situations in which they operate outside of work hours. Thus, one way to facilitate the analysis of psychosocial factors is by grouping them into categories or areas; for example, they can be classified as personal aspects, factors inherent in work tasks, and organizational factors, among others, to try to explain the nature of their interactions and effects on health (International Labor Office, 1984).

In this regard, it is normal to observe that workers in the manufacturing industries are exposed to psychosocial factors as well as psychosocial factor risks. The International Labor Organization deemed the workplace as an important source of psychosocial risks by identifying that human beings spend most of their life at work. Consequently, it presented the workplace as the ideal place to treat workers and to look after their health and well-being. On the other hand, that organism affirmed that the psychosocial risk factors that take place in the world, and particularly in Mexico require effective government participation that supports the increase of health and safety in the workplace. Government must promote and help providing healthy working environment that allows workers to achieve honest or decent work through policies, strategic lines of action and projects with a preventive focus, so that work centers with safe and healthy conditions can prevail (Secretaría del Trabajo y Previsión Social - STPS, 2016).

This present era is one in which the population is being affected by stress due to the excessive, and perhaps self-imposed, pace of life and work. Workers are continually exposed to situations that create an imbalance on a personal and work level, placing them in a state of vulnerability to diseases associated with nervousness, stress and unjustified fear (Lupien, McEwen, Gunnar, & Heim, 2009). These constant changes in the work environment are perceived by workers as threats and could lead to chronic stress, acting as backdrops for health disorders. The risk factors generated by the organization at the workplace lead to physiological, emotional, cognitive and behavioral responses that result in disease under certain conditions of intensity, frequency and duration (Trade Union Institute of Labor, Environment and Health - ISTAS, 2010). Finally, after analyzing the increase in these diseases, the World Health Organization has signaled 2020 as the year when chronic stress-related depression will be the second cause of disability in the world (Organización Mundial de la Salud- OMS, 2012).

Based on the foregoing, it can be affirmed that identifying and assessing psychosocial risks is an important task in this investigation due to the great impact they have on the workers' health and on their performance in the company, specifically in manufacturing companies. This work's main objective, then, is to determine the state of the art on the psychosocial factors present in manufacturing companies, as well as the instruments that are used to identify and evaluate them. Another important objective is

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to analyze the instrument provided by the Ministry of Labor and Social Security (STPS) through the standard NOM-035-STPS-2018, which is mandatory for all work centers located in the country. Finally, other goals are to make recommendations on the usefulness of evaluating psychosocial factors and to offer suggestions for further research.

Background

Psychosocial factors are present in all work areas without exception, thereby the importance of their analysis. Currently, different ways to refer to psychosocial aspects are being used; therefore, it is important to point out their differences. Psychosocial factors are concerned to conditions in the individual, in the non-work environment and the intra-work environment, which depending on the intensity and duration can have a positive and negative impact on a worker, groups of workers or entire organizations (Oficina Internacional del Trabajo - OIT, 1986). While psychosocial risk factors are those that are likely to negatively, influence the workers' health and well-being (Benavides, *et al.,* 2002).

Worldwide, occupational health and occupational medicine perform a wide variety of studies aiming to ensure health and well-being of the worker (Kawakami & Tsutsumi, 2010, Siegrist, 2008, Van Vegchel, De Jonge, Bosma, & Schaufeli, 2005). As a result of globalization and technological advances, there have been created work environments with high cognitive, emotional and psychological demands, with little control over the task, under low social support and poor quality of leadership (International Labor Office, 2012).

In relation to the above, there is evidence to affirm that these work characteristics are strongly related to cardiovascular risk factors with a high probability of cerebrovascular events and ischemic heart disease (Belkic, 2004, Hausser, Mojzisch, Niesel, & Schulz-Hardt, 2010; Juárez, 2007; Smith, Roman, Dollard, Winefield, & Siegrist, 2005; Steptoe & Kivimäki, 2012). Likewise, there is significant relationship between psychosocial risk factors in the workplace and different types of disorders, such as musculoskeletal injuries (Palliser, Firth, Feyer, & Paulin, 2005), work stress (Shultz, Wang, Crimmins, & Fisher, 2010; Valverde, 2007; Wang, Schmitz, Dewa, & Stansfeld, 2009), absenteeism (Darr & Johns, 2008; Gartner, Nieuwenhuijsen, Van Dijk, & Sluiter, 2010), the increase in work-related accidents (International Labor Office (ILO), International Program on Safety and Health at Work and the Environment & International Occupational Safety and Health Information Center, 2007), interference in the work-family relationship (Kawakami & Tsutsumi, 2010; Kinman & Jones, 2008), sleep disorders (Heponiemi, *et al*., 2009; Kudielka, Von Kanel, Gander, & Fischer, 2004; Yang, Ge, Hu, Chi, & Wang, 2009) and alterations in mental health (Bourbonnais, *et al*, 2006; Burr, Albertsen, Rugulies, & Hannerz, 2010; Wang, Schmitz, Dewa, & Stansfeld, 2009; Griffin, Greiner, Stansfeld, & Marmot, 2007; Kirchhof, *et al*., 2009; Laurent, Pinte, Gerard-Guery, Wehrly, & Pamart, 2009: Lehr, Hillert, & Keller, 2009; Silva, De Souza, Borges, & Fischer, 2010) as affective-depression disorders (Lehr, *et al*., 2009; Rugulies, Bultmann, Aust, & Burr, 2006; Ylipaavalniemi, *et al.,* 2005) and anxiety disorders (Griffin *et al*., 2007). This evidence provide theoretical frame that emphasize the relevance of psychosocial factors at work. Developing countries such Mexico are recognizing this importance by releasing initiatives and normative standards that can contribute to their detection and prevention. In this chapter, some of this normative is commented and described.

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PSYCHOSOCIAL FACTORS AND THEIR ASSESSMENT

As previously mentioned, in the workplace and especially in the manufacturing industries, workers are exposed to a great variety of psychosocial factors that can influence their health. Thus, it should be considered that work conditions ought to ensure the safety and health of the worker at the workplace in addition to seeking to provide them with free time to rest. Another aspect that should be allowed for should be the opportunity to collaborate with society and to engage in the search for self-realization. According to the International Labor Office (2012), the presence of psychosocial risk factors is becoming more evident in both developed and developing countries, affecting all workers. These factors have a severe impact on workers' health, absenteeism and performance. One of the main reasons is that the pace of life is getting faster each day, and technological changes are occurring more rapidly. Companies, then, should look for an optimal way to identify, assess and effectively deal with such factors. A starting point should be to define the characteristics that a work center should show to promote health:

1. Incorporate safety and health measures at work, reinforcing the quality of work life as well as the worker's (physical and mental) health.
2. Support workers so that they develop the capacity to face work, personal or family-related problems that may affect their health and work performance.
3. Encourage workers ability to handle their chronic conditions, so that they become proactive in caring for their health and seeking a better quality of life.
4. Promote health from a collective point of view as it looks to improve task organization, working conditions, and the environment while encompassing both the family and the social contexts.
5. Consider a balance between its demands and workers' capabilities.
6. Consider that workers learn at the workplace, and learning is ongoing.
7. Consider aspects on which the worker can make decisions.
8. Realize the need for a certain degree of social support and recognition at the workplace.
9. Understand that workers must be able to establish a relationship between what they do or produce and social life.
10. Workers must be motivated by perceiving that their job leads to some kind of desirable future.

Regarding the previous points, the ecological model (see figure 1) consists of analyzing the psychosocial factors considering aspects ranging from the personal to the social. The reason in that it recognizes that there is a wide variety of factors that influence the health of the worker and that not all of them necessarily belong to the workplace, considering that human beings are a part of a complex system of interrelations that can influence them both positively and negatively.

When analyzing the ecological model, it is evident that risk factors can be present at work, at home or in the social environment, and each environment could contain one or more stress factors. Because it is highly difficult to achieve a separation between them, the presence of risk factors in any given environment tends to affect the others. Below is a description of each of the environments and their stress-vulnerable points.

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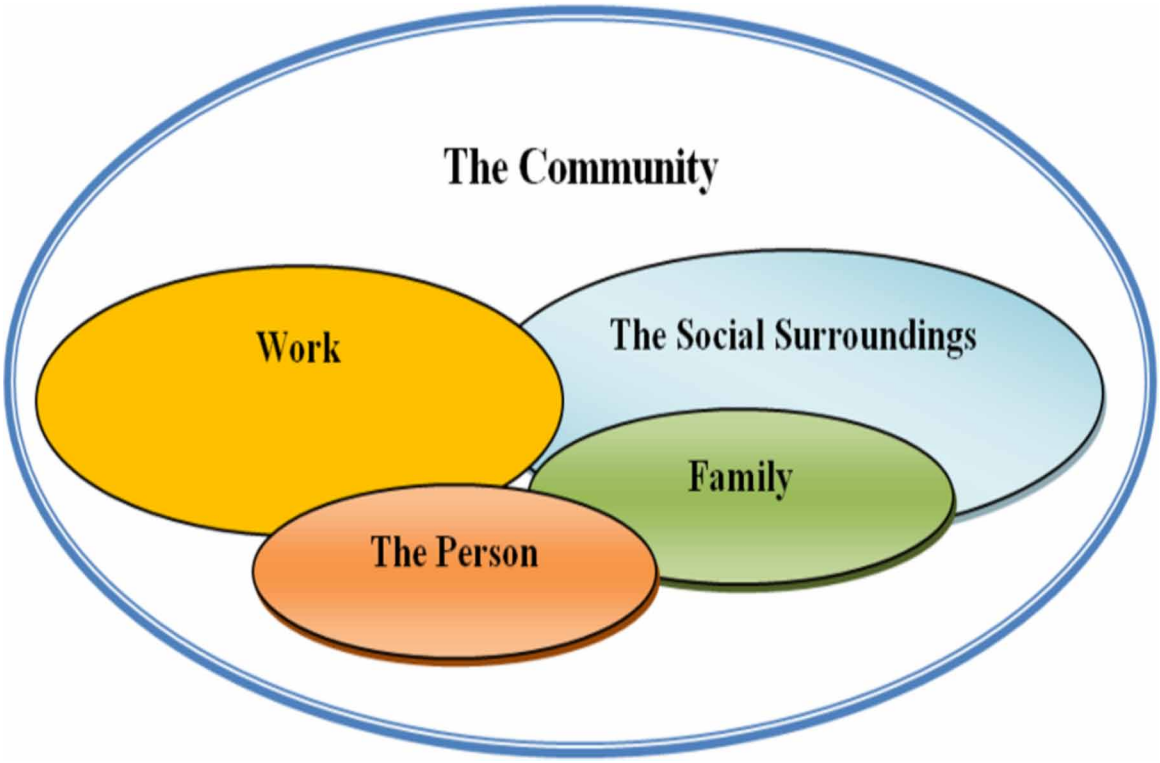
Figure 1. Ecological model (Source: Oficina Internacional Del Trabajo, 2012)



The Person

In individual terms, aspects such as age, gender, some type of disability and socioeconomic status are related to the presence of stress, and most times stress results from a combination of factors. For example, the relationship between gender, work and stress is a highly complex one. The reason is that women play a fundamental role in caring for the family. In this sense, the daily work load for women who have a full-time job outside the home is usually greater than that of men as regardless of the working day, they must still fulfill family responsibilities at home.

The Family

One of stress triggers can be the work-family relationship, especially when both parents work. It is difficult for workers to balance the different schedules and shift durations while keeping in mind the lack of control they have over their work.

The Community

The ability to socialize is often key in the stress levels. This environment considers the ease with which people establish good communication and support with their family members, or friends. These rela-

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tionships range from frequent family gatherings to belonging to sports groups, both of which promote adequate handling of problems.

Social Surroundings

This environment can have both positive and negative effects on psychosocial risks. For instance, the social environment can contribute with aspects such as regulations that allow a better response to potential stressors such as addictions. Likewise, if the society in which people operate has good public transportation, sports facilities, social support such as workshops to help them better cope with problems, and good medical service, people will be able to face stress factors more effectively as the situations that represent a threat to their stability are reduced.

The Workplace

Technological changes and constant competition worldwide promote new forms of work organization where the intensity of work, hours and shift durations, new forms of employment (partial or temporary contracts), hiring requirements (age, experience, and training), among others, stand out. Consequently, the workplace has become the most important source of risk, having the greatest impact on the balance between work and private life. The workplace can help to prevent stress by matching workers' capabilities to the workload and tasks assigned to them. It is certainly recognized that the level of stress can serve as essential motivation to boost performance and create a bond with work. However, there can be a point where that initial stress becomes excessive.

Also, it is possible to classify the psychosocial factors according to the place where they originate. This literature review focused on the psychosocial factors to which workers at the workplace are exposed. These refer to the organizational conditions that can be both positive and negative (Minztberg, 1993). There is a great variety of them, and they are classified according to what one wishes to analyze. These factors facilitate work, job growth and job satisfaction, and increase workers' productivity and motivation (Kalimo, El-Batawi, & Cooper, 1988). For example, Table 1 shows Roozeboom, Houtman and Van den Bossche's (2008) classification of the factors that can be observed in an organization.

In addition, psychosocial factors become psychosocial risks when they begin to negatively affect workers' health and performance. Just as there is a great variety of psychosocial factors, the number of risk or stress factors is also quite broad. Cox and Griffiths (1996) state that each of the psychosocial factors can lead to a number of risks. Table 2 lists some of them.

In general, it is appropriate to say that the purpose of most of the instruments is to analyze the psychosocial factors related to intra-labor conditions, which are associated with the work and organization characteristics that influence the health and well-being of people. The work environment-related psychosocial factors can be grouped into the following four categories: work demands, control over work, presence of leadership and reward or recognition of worker's performance.

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Table 1. List of organizational factors

ORGANIZATIONAL FACTORS		WORK FACTORS	
Organization's Philosophy and Policies	Work-family relationship Human resources management Health and Safety policies Corporate social responsibility Commercial strategies	Work Conditions	Type of contract Salary Career design
Organizational Culture	Work relationships policies Organizational Information Organizational Communication Organizational Justice Supervision / Leadership	Job Design	Staff turnover Group work
Industrial Relationships	Work climate Trade Union representation Collective agreements	Work Quality	Use of personal skills Job demands Autonomy and capacity to control Physical safety at work Social support Work hours Teleworking

Table 2. Psychosocial stress factors

Work content	Lack of variety at work, short work cycles, fragmented and pointless work, low use of skills, high uncertainty, intense relationships.
Overload and pace	Excess of work, work pace, high temporary pressure, urgent completion deadlines.
Schedules	Changing shifts, night shift changes, inflexible schedules, unpredictable work schedule, long work hours or without time for interaction.
Control	Low participation in decisión-making, low capacity to control the work load, and other work factors.
Environment and teams	Poor working conditions, inadequate work teams, lack of equipment maintenance, lack of personal space, poor lighting or excessive noise.
Organizational Culture and functions	Poor internal communication, low levels of support, lack of task definition or not in accordance with organizational objectives.
Interpersonal relationships	Physical or social isolation, scarce relationship with bosses, interpersonal conflicts, lack of social support.
Role in the organization	Role ambiguity, role conflicts and responsibility for others.
Career development	Uncertainty or halts in the professional career, poor remuneration, contract insecurity.
Work-family relationship	Conflicting demands between work and family, low family support. Dual career problems.
Contract safety	Dangerous work, temporary work, uncertainty regarding work future. Insufficient remuneration.

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Work Demands

These encompass the work demands imposed on the individual. Among them are the following:

1. The amount of work that must be done during a work day turns into a risk when the time available to carry it out is insufficient; this results in accelerated work rates and in having to work overtime to achieve the expected objectives.
2. Mental requirements are defined by the quantity of information and its complexity as well as by whether the task requires considerable memory, attention or concentration efforts.
3. Emotional demands occur when workers must understand other people's situations and/or feelings and exert self-control over their own emotions so as not to affect their work performance.
4. There is high degree of responsibility, for example, when workers must answer for the results of their work area or section.
5. Environmental and physical demands are considered a risk factor when workers must perform their work under unsafe or unhealthy conditions which also require a great amount of physical effort.
6. The type of shift becomes an important aspect to analyze since there is evidence that when working on night shifts, for long hours or during rest days, workers experience a greater toll on their health (Tucker & Rutherford, 2005).

Control Over Work

It refers to the individual's ability to influence and make decisions regarding some of the aspects involved in the performance of their work. These aspects occur more frequently when workers have the ability to adapt to the challenges of the workplace and when the task fosters the application of the worker's knowledge along with the development of new knowledge and skills. In this sense, it is essential to consider the workers' ability to establish the sequence of their activities as well as their work pace.

Leadership and Social Relations at Work

Leadership refers to a type of social relationship that occurs between the hierarchical levels in descending manner, whose characteristics influence the way of working and the work environment. Thus, it is important for leaders to establish a good relationship with their workers (subordinates) to achieve the expected results. Likewise, they must find the best way to approach conflict resolution and must be in constant pursuit of motivation, support and good communication with their collaborators. This is achieved when leaders offer their subordinates effective feedback, one that allows them to identify their strengths and their areas of opportunity to improve their performance.

Reward

This term deals with the recognition that workers obtain in exchange for their performance. This category includes various types of remuneration: financial (economic compensation for work), esteem (psychological compensation, which includes recognition of the social group and fair treatment at work) and opportunities for promotion and safety at work. Receiving these rewards from the organization boosts workers' feelings of pride and the perception of job stability, as well as their feeling of self-realization.

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IMPACT OF PSYCHOSOCIAL FACTORS

Several authors affirm that the presence of psychosocial factors in the work environment is closely related to stress as most of the factors become a risk when they create working conditions that exert higher demands on workers. In this regard, Palmer, Cooper, & Thomas (2003) affirm that stress is triggered when the demands or the pressure perceived by workers exceed their ability to cope with them. It is also noteworthy that stress is a natural defense mechanism that contributes to human survival. However, it is also a cause for stress when either a single worker's or a group's knowledge and ability to resist, face and overcome difficulties does not match the expectations of a company's organizational culture. Moreover, as technology advances, people spend 24 hours a day connected to their phone, email, internet and other means of electronic communication, which allows them to be able to deal with job issues outside their work schedule. Thus, the boundaries separating work from domestic life are increasingly blurred as the workplace is set by the multiple and instant types of communication and the high level of global competition.

When speaking of work, both formal and informal types of work are considered. In the case of the latter, it can be even more difficult to separate work demands from those of everyday life since its financial survival depends on an enormous amount of workload and highly unpredictable working conditions.

On the other hand, the workers' perceived need to keep working to ensure a steady income can lead to many personal concessions resulting in physical, psychological or behavioral reactions caused by stress. When these demands are maintained for a prolonged time, some workers tend to suffer from anxiety disorders, emotional exhaustion, and severe depression, which gives rise to a loss of interest first in their work and then in life in general. The World Health Organization (WHO) affirms that more than 300 million people in the world suffer from depression, a disorder that is the main current cause for disability. At the same time, many of them also suffer from anxiety symptoms. According to a recent study conducted by the WHO, depression and anxiety disorders cost the world economy one billion dollars per year in lost productivity (Organización Mundial de la Salud - OMS, 2017). In Mexico, 40% of employees suffer from work-related stress. This stress is associated with pressure from supervisors and clients, lack of work stability, and excessive workloads (Oficina Internacional del Trabajo, 2012). On the other hand, as Figure 2 shows, an analysis of the presence of depression in households showed that the percentage of household members who are 12 years old or older and who have felt depression at various times during the year has increased. When researching the information a bit further, it was found that during the year 2017, 60% of the people who suffered from this disorder were women. (Instituto Nacional de Estadística y Geografía - INEGI, 2017)

As can be seen, the main consequence of psychosocial risk is stress, whose most frequent symptoms range from irritability to depression and are generally accompanied by physical and mental exhaustion. Likewise, stress directly affects workers' performance, which results in low productivity and affects work comfort. The reason for the above is that a person undergoing a large amount of pressure is incapable of making correct decisions, and his/her creativity decreases notably as the mind is unable to find the multiple solutions required for successful performance. Güilgüiruca, Meza, Góngora, & Moya (2015) pose that a company with many stressed people usually features a poor work environment. Based on the above, it is important for employers to understand that poor intervention leads to a decrease not only in productivity but in the quality of life of those suffering from stress, which may even be a reason for permanent sick leave.

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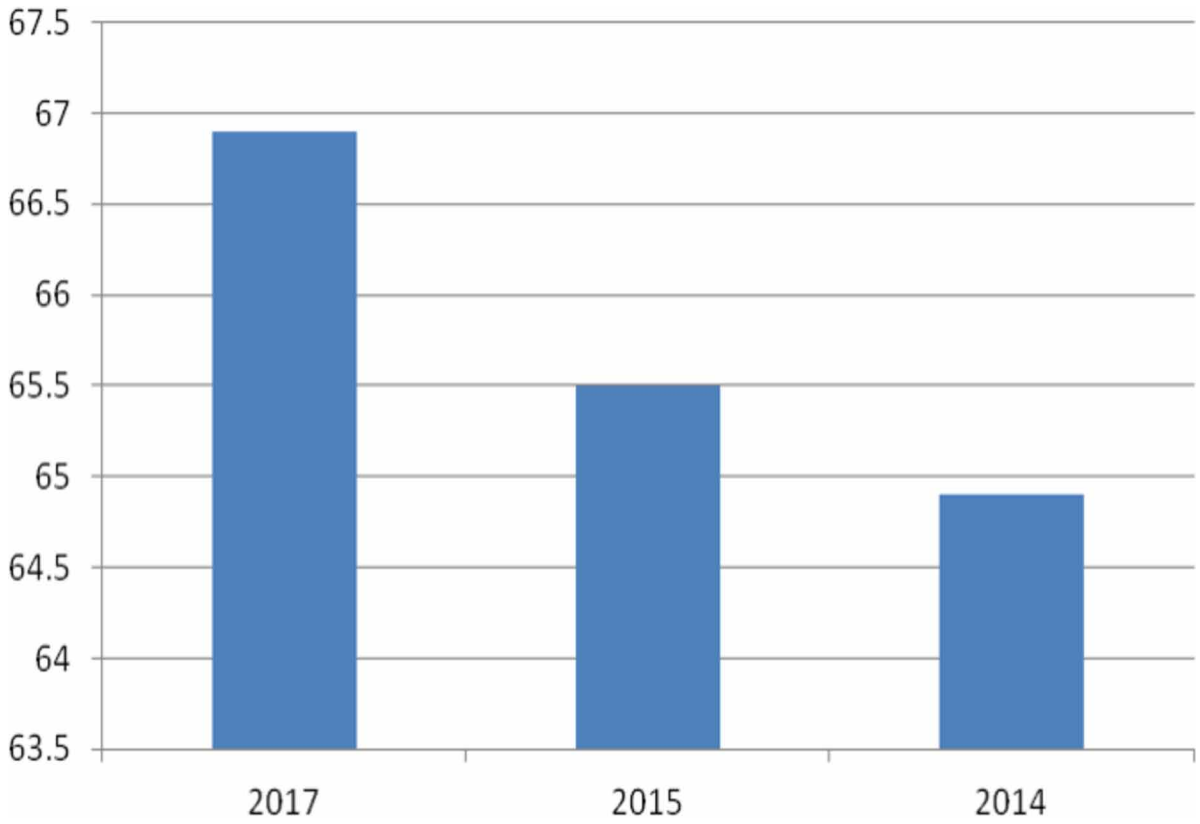
Figure 2. Percentage of household members who experience feelings of depression at various times during the year



Human beings are complex by nature, and since they are an organization's most important resource, they represent a constant challenge for the future of companies. Thus, there is an important need to incorporate processes that understand and address both the human and the work dimensions of the people that make up each company. Doing so will allow companies to identify the influence that psychosocial and organizational factors have on productivity, as well as to work on strategies that allow for continuous improvement. Along these lines, work policies worldwide are establishing wellbeing programs which are based on the analysis and evaluation of the factors that affect mental health, such as the standard of living and the working conditions, while preventing and promoting health, including mental health. This is done through activities that reduce stigma and discrimination and improve health services, including occupational health services, to expand the access to scientifically proven care.

Issues, Controversies, Problems

Immersed in a constant change due to technological development and communications, in new forms of organization with more automated production processes, and in the search for global competitiveness in the midst of an economic crisis, companies remained unaware that it would be necessary to create new profiles for job positions as the task demands on workers increased, taking a toll on both workers'

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health and company productivity. The Ministry of Labor and Social Welfare in Mexico, through the National Program for Emotional Wellbeing and Human Development at Work (PRONABET) began to investigate the possible causes for psychological resignation, high rates of absenteeism, staff turnover, lack of loyalty, increase in sick-leave days, costs due to accidents, and employees' low sense of belonging. An important point in this research was that the above-mentioned problems were observed even in those companies that complied with the current regulations, which focus on safeguarding workers' safety and health within the work area. In this sense, it has been observed that neglecting to factor in the psychosocial factors to which workers are exposed can create problems for both the company, such as low work performance, and the workers' health.

The International Labor Office (2012) states that in the long term, stress at work can be a factor in the presence of musculoskeletal disorders, hypertension, cardiovascular diseases and overall poor health. Likewise, stress could alter immunological functions, thus allowing for the development of cancer. In addition, work-related stress can contribute to an inability to cope with work and to a decrease in job opportunities and prospects.

It can also indirectly cause problems inside and outside the workplace, such as violence; drug, tobacco and alcohol abuse; tension in family relationships; depression and even suicide. These are potentially enormous costs, both in terms of personal loss and economic burdens. Upon considering the above, the need arose to evaluate psychosocial risks in a context of major social, political, economic and technological transformations, all of which have an impact on the workplace. It has been shown that working conditions take a toll on workers' health and that stress is known to be one of the main causes of occupational diseases. Consequently, there is increasing political interest in safeguarding workers' health and well-being (The International Labor Office, 2012; Secretaría del Trabajo y Previsión Social - STPS, 2016; Organización Mundial de la Salud - OMS, 2017). By reflecting on the wide variety of instruments available and taking into account that the identification of psychosocial factors for their evaluation requires a very different analysis from that of traditional assessments, it is not possible to establish one general instrument as either ideal or invalid. Rather, it is necessary to choose an instrument that allows for a precise diagnosis of the real conditions of a specific organization -one that takes into account the particular characteristics of the economic sector to which the organization belongs. Likewise, it is important to ensure that the choice of instrument does not obey any private interests of the organization other than to determine the tool that is the most convenient for each company and always respecting the legal guidelines established in each country.

Juarez (2008) holds that evaluation instruments or methods can be grouped into three categories: a) environment-centered models, which focus on the realities of work in the search for risks or potentially inconvenient conditions; b) individual-centered models that explore workers' traits, characteristics or internal conditions as well as the way in which these can adversely affect their health, well-being or performance; and c) models centered on exploring the effects of individuals' interactions with their context. He concludes that in structuring psychosocial models, one of the universal principles should be the consideration of these three dimensions. In Mexico and Colombia, the development of instruments is more recent. However, in many of the cases it is decided to use instruments created in other countries, although it is not always possible to obtain the evidence that these instruments have psychometric properties. It is important that developing countries have validated instruments, since with societies with different labor characteristics and that must face strong changes at the economic and social level; propitiating the presence of work stress problems (Gómez, 2010). Although this field contains abundant literature reporting results on the effect of work conditions on health (Uribe, 2008, Whaley, Morrison,

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Payne, Fritschi, & Wall, 2005, Tucker & Rutherford, 2005), there is still a lot to examine to attain clear knowledge on the subject. In this regard, it is important to mention, for example, the studies on work stress, psychological exhaustion, psychosomatic disorders or psychopathological problems and more specific issues such as depression, anxiety, or low back pain, to name a few. In all these cases, evidence has been shown of the relationship between work conditions and these effects.

METHODOLOGY

As shown in Figure 3, the methodology followed in the conduction of this work consists of five stages: a) selection of the database and government pages to be used, b) selection of keywords, c) sorting out of the results, d) final selection and e) selection of the instruments for the evaluation of psychosocial factors.

Selection of Database and Government Pages

Database selection was done by identifying those that showed a greater number of indexed journals and focused mainly on the areas of engineering, social sciences and public health.

Key Word Selection

Once databases were selected, key words were chosen according to the search characteristics of each one.

Sorting out of Results

After the results of the databases advanced searches were obtained, they were exported and analyzed to then be sorted out. The results were classified according to the following criteria: Psychosocial factors background, psychosocial factors assessment instrument, and application sector (manufacturing, health centers, education, others). Both the publications that did not yield information on these criteria and duplicates were eliminated.

Final Selection

After this first sorting out, the articles centering on the analysis of psychosocial factors from their context and those focusing on analysis within the manufacturing area were preselected. Next, their whole content was analyzed. Those articles showing the entire content and those whose research, application and/or development took place inside the manufacturing companies were identified.

Compilation of the Psychosocial Factors Assessment Instruments

Once the content of both the chosen publications and the government pages was analyzed, a compilation was made of the instruments used to evaluate the psychosocial factors at the workplace.

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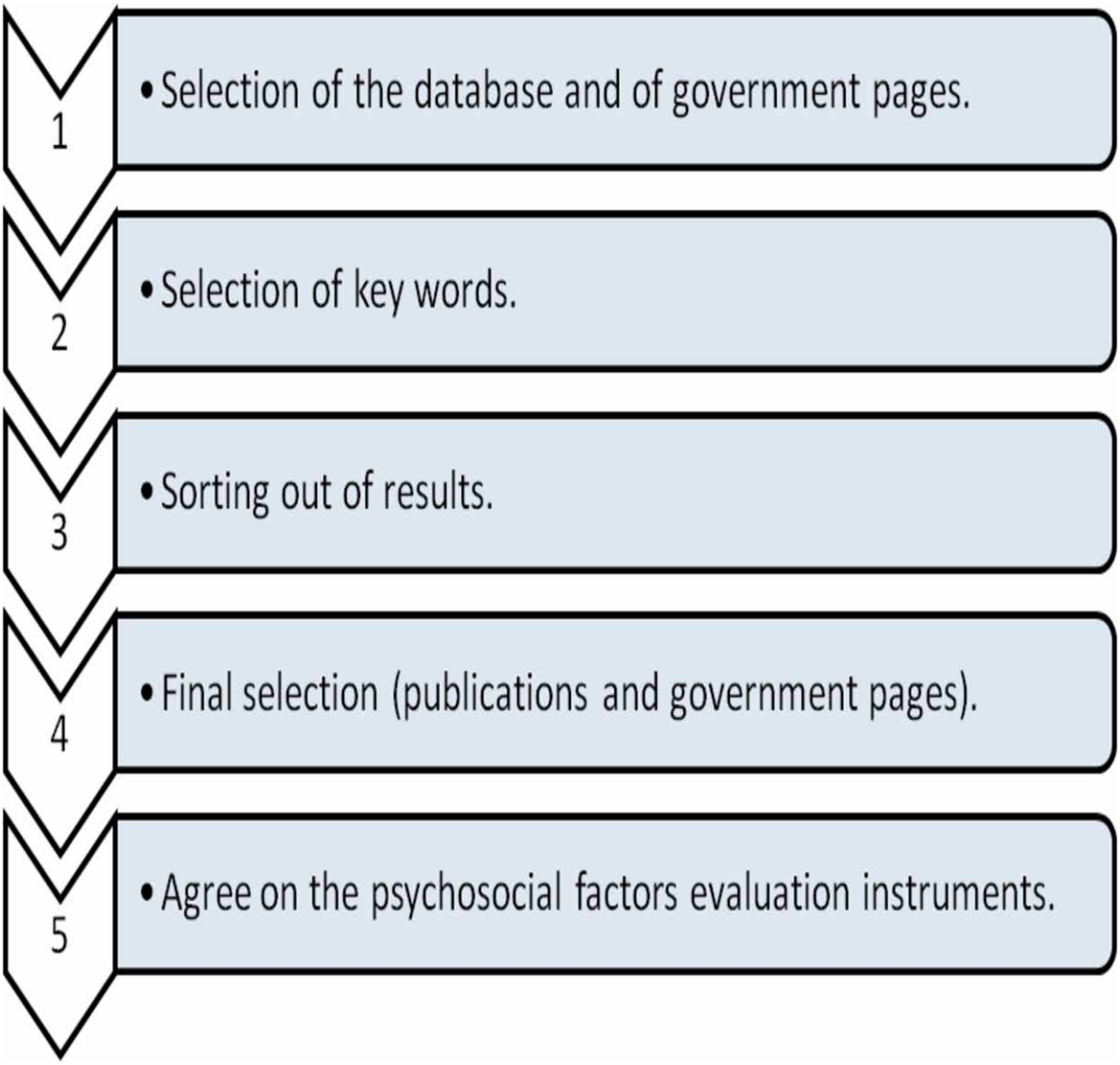
Figure 3. Methodology stages



RESULTS

The results obtained throughout the four phases of the methodology are shown below.

Selection of Database and Government Pages

The selected databases were ScienceDirect and CONRICyT. They were selected because they feature a large number of indexed journals. Besides, they focus mainly on the manufacturing sectors. On the other hand, the following government pages were selected: the Ministry of Labor and Social Welfare (STPS), the Mexican Institute of Social Security (IMSS), and the International Labor Office (OIT).

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Key Word Selection

The key words used during the search were: Psychosocial factors, Psychosocial risk factors, Evaluation of psychosocial risk factors, manufacturing industry.

Sorting out of Results

During the first search, a total of 2468 publications was found. In the "firs search" column, Table 3 shows the number of articles obtained per database. The next step consisted of classifying those articles into either literature review or application of a psychosocial factors-evaluation instrument according to the information they contained. Once this classification took place, the number of articles was reduced to 22.

Final Selection

Finally, out of the 22 publications that met the established criteria, only those that could be freely accessed were selected, yielding an end total of 8 articles (see Table 3). Two of the studies described methodologies for psychosocial factors assessment, three consisted of literature review, and 3 addressed the use of a psychosocial assessment instrument at the workplace (see Table 4).

Table 3. Number of items found by database

Database	Number of items			
	First search	First selection	Second selection	Final selection
ScienceDirect	2063	20	10	7
CONRICyT	405	2	1	1
TOTAL	2468	22	11	8

Table 4. Classification used for publication selection

Publication types	Amount	References
Methodology to assess psychosocial factors	2	(Toro, Londoño Londoño, Sanin Posada, & Valencia Jáuregui, 2010; Instituto Nacional de Seguridad e Higiene en el Trabajo (INSHT), 2015)
Literature review on psychosocial factors	3	(Moreno Jiménez & Baéz León, 2010; OFICINA INTERNACIONAL DEL TRABAJO GINEBRA, 1984; Herazo, Ospina Serna, & Ramírez Henao, 2013)
Application of psychosocial factors assessment instruments	3	(Luceño Moreno, Martín García, Jáez Díaz, & Díaz Ramiro, 2005; Blanch, Sahagún, & Cervantes, 2010; Vaquero Álvarez, Álvarez Theurer, & Romero Saldaña, 2018)

Psychosocial Factors Assessment Instruments and Techniques

The Ministry of Labor and Social Welfare (2018) states that psychosocial factors prevention and control measures, which also foster a favorable organizational environment, should be established at three levels: a) The organizational plane, where the necessary policies and measures to foster a favorable environment

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are established; b) The group plane, in which workers' interrelations, time of work, sharing of information to worker, and provision of the necessary courses to promote awareness of what the company's goals are fostered; and c) The individual plane, when it is confirmed that there are health alteration symptoms.

Because psychosocial risk factors depend mostly on the workers' perception, they need to be evaluated systematically as it has been difficult to prevent them. Several authors hold that such difficulty stems from the methodologies used since risk factors assessment differs from the traditional physical, ergonomic and other types of assessments (Blanch, Sahagún, & Cervantes, 2010; National Institute of Safety and Health at Work -INSHT, 2004; Villalobos, 2005; Tejada & Gómez, 2009). Another difficulty lies in the lack of standardization among some of the questionnaires and diagnostic methods as they do not have psychometrically reliable data (Guardia, Peró, & Barrios, 2008, Ministerio de la Protección Social, 2009).

On the other hand, Guardia, Peró and Barrios (2008) consider that an important cause for the difficulty in addressing psychosocial risk factors is that organizations tend to perform very simple and general systems, focusing on survey application as their only option to address such risks while ignoring other indices such as occupational health and job position evaluation, among others, which could be very useful.

Meliá indicates that any psychosocial risks evaluation instrument must be based on research, an index of reliability, (construct and content) validity tests, an item quality psychometric analysis and standardization processes for the specific application to be done (Ministerio de la Protección Social, 2009). In addition, the instrument confidentiality must be ensured, and the participants must receive guarantee of anonymity and confidentiality through the use of an informed consent. That is why currently, many companies in the search for results that are as close as possible to reality hire an external person to, first, explain what the study consists of and, then, continue with the study, including the analysis of both the surveys and of the afore-mentioned indices.

Furthermore, Rodríguez, González and Carbonen (2007) point out that, even if doing so results in the organization's using more resources (time and money), it is highly important for questionnaires to be adapted to the organization being analyzed as this aspect has an impact on the instrument's reliability.

The most widely used psychosocial factors identification and assessment instruments are listed below. Table 5 shows a compilation of them. The instruments are arranged chronologically and are accompanied by their country of origin, year of creation, aspects they evaluate, and the number of items that make up the instrument.

Table 5. Instruments for the assessment of psychosocial risks at work. Improved from (Charria, Sarsosa, & Arenas, 2011)

Name	Author	Country of origen	Year	Evaluated aspects	Number of items
Psychosocial factors identification guide	Mexican Institute of Social Security (IMSS, 1986)	México	1986	• Task-dependent psychosocial factors. • Work system-related. • Social interaction-dependent . • Organization related.	56
Job Content Questionnaire (JCQ)	Karasek, R.A., Pieper, C. & Schwartz, J (1993).	United States	1985/ 1993	• Psychological demands • Control over one's work • Social support (peer support and supervisor support)	29

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Table 5. Continued

Name	Author	Country of origen	Year	Evaluated aspects	Number of items
Bocanument	Guillermo Bocanument	Colombia	1993	• Work performance-derived psychic and biological alterations • Mental load • Interpersonal relations • Work organization • Staff administración • Job's specific content.	47
Effort Reward Imbalance Questionnaire [ERI]	Siegrist, J. (2000)	Germany	1996	• Effort • Reward • Overcommitment	23
Assessment Method of Psychosocial Factors FPSICO	National Institute of Safety and Health at Work	Spain	1997	• Mental load • Temporary autonomy • Job content • Supervision and participation • Role definition • Concern for the worker • Personal relationships	75
Copenhaguen Psychosocial Questionnaire (CoPsoQ – Istas 21)	Denmark's National Institute of Occupational Health – Adapted for Spain by the Union's Institute for Work Environmnet and Health [ISTAS]	Denmark	2000	• Doble presence • Psychological demands (quantitative, sensorial, cognitive, emotional) • Active work and skill development (influence over work, possibilities for development, control over working time, sense of work, integration in the company) • Leadership and social relationships at the company (predictability, clearity and role conflict, leadership, reinforcement, social support, opportunites for social relationships, group feeling) • Lack of compensations (job insecurity and esteem).	Long version 133 Medium 99 Short 38
Psychosocial Factors Assessment Questionnaire	Navarro Institute of Work Health in Spain (2002)	Spain	2002	• Participation, implication and responsibility (autonomy, team work, initiative, control over task, control over employee, staff turnover, supervision, task enrichment) • Formation, information and communication (communications flows, welcoming, person-work adjustment, acknowledgement, training, job description, isolation). • Time management (Work pace, time constraints, work load, temporary autonomy, fatigue). • Group cohesion (Social climate, conflict management, cooperation, work environment).	30
Multidimensional Questionnaire DECORE	Luceño, L., Martín, J., Miguel, J. & Jaén, M. (2005).	Spain	2005	• Cognitive demands (quantitative y qualitative) • Control (command over task, work place, decisions) • Rewards (salary y safety) • Organizational support (relationship with bosses, relationship with peers).	44
MCMutual - UB Battery	University of Barcelona – MC Mutual Corporation	Spain	2005-2006	• Organization of the work time. • Communication • Training and development • Social and group effects • Participation • Job content • Task and work environmnet requirements	46

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Table 5. Continued

Name	Author	Country of origen	Year	Evaluated aspects	Number of items
Survey of work, employment, health and occupational safety conditions of Quebec (EQCOTESST)	National Institute of Public Health of Quebec	Canada. Chilean adaptation.	2008/ 2010	• Psychological demands • Control • Effort-reward balance • Social support from superiors • Stress Scale • Use of psichotropics • Depression symptoms	
Work Conditions Questionnaire	Blanch, J. Sahagún, M. Cervantes, G. (2010)	Spain	2010	• Organization and method (Regulation and development) • Organization and environment (material environment and social environment) • Organization and Person (organization-person adjustment)	44
Battery for Psychosocial Factors Assessment Instruments	Ministry of Social Protection	Colombia	2010	*Intra-labor Conditions* o Work demands (quantitative, mental load, emotional, job responsibility, environmental demands and physical efforts, work day duration, role consistency, influence of work environment over outside of work environment). o Control (work autonomy, opportunities for development and use of skills and abilities, participation y handling of change, role clarity, training) o Leadership and social relations at work (leadership characteristics, social relations at work, feedback on performance, relation with subordinates) o Reward (Acknowledgement and compensation, sense of belonging towards company and work) *Out of work conditions* o Time out of work o Family relationships o Communication and interpersonal relations o Family group's financial situation o Living conditions and environment characteristics o Influence of the out-of-work environment over work o Home-work-home commuting. *Individual Conditions* o Sociodemographic information o Occupational information	Intralaboral forma A 123 Forma B 97 Extralaboral 31
Questionnaires to identify psychosocial risk factors and to assess the organizational environment at work centers.	Ministry of Labor and Social Welfare (STPS, 2018)	México	2018	• Work environment • Activity-inherent factors o Work loads o Control over work • Organization of the working time o Work day duration o Work-family relation • Leadership and work relations at the workplace. o Leadership o Work relations o Work violence • Organizational environment o Acknowledgement of work performance o Sense of belonging and work instability	72

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As can be seen, there is a wide variety of instruments, most of which most were developed in Spain. On the other hand, Mexico has two instruments; the first one consists of the Psychosocial Factors Identification Guide, created by the Mexican Institute of Social Security (IMSS) in 1986, and the second one created by the Ministry of Labor and Social Welfare (STPS) in 2018. Moreover, all the questionnaires take into account the task's different demands as well as an assessment of the work relations.

DISCUSSION

The interest in identifying and assessing psychosocial risk factors has increased considerably in recent years, and its purpose has been to achieve a favorable work environment in all productive sectors. When considering the instruments analyzed above, it can be seen that out of the last two, one corresponds to the Battery of psychosocial risk factors assessment instruments, prepared by the Ministry of Social Protection in Colombia. This is one of the few instruments that show evidence of compliance with the necessary psychometric tests to back up the instrument's validity (Albarrán, *et al.,* 2018). The other and more recent questionnaire is the one proposed by the Secretariat of Labor and Social Welfare in Mexico. However, unlike the Colombian battery, this instrument does not yet show evidence of having been administered at the workplace, and therefore, there is no evidence of its validity. It must be highlighted that despite the fact that the work centers in much of northern Mexico belong to the manufacturing sector, at the time when this research was conducted, no evidence was found of studies related to psychosocial factors to which employees were exposed at work, this revealing the scarce amount of existing research on this subject in the manufacturing or industrial sector.

Currently, Mexico is undergoing a process of adaptation. The reason is that on October 23, 2018, through government organizations, Mexican Official Standard NOM-035-STPS-2018 was accepted. Its objective goes beyond identifying and assessing psychosocial risk factors as it aims to foster favorable organizational environments in the workplace, considering aspects such as leadership and work relations, control over work, social support, violence at the workplace and workloads. It is worth mentioning that this norm will be auditable as of October 23, 2019 (Secretaría Del Trabajo y Previsión Social-STPS, 2018).

FURTHER RESEARCH SUGGESTIONS

It is important to recognize that due to the databases constraints, some articles may not have been considered. However, by the date of publication there were no records of administration of the instrument not only in the manufacturing industry, but in any work center. Thus, it is of essence to carry out research on psychosocial factors in any field, but mainly in industry as it is one of the sectors with the highest task demands on workers. Likewise, it would be ideal to conduct studies on the impact of psychosocial risk factors on organizational goal achievement.

As was mentioned in the discussion section, there is no evidence of the suggested questionnaire having been administered by the Secretariat of Labor and Social Welfare at the different work centers, nor of its validation. Therefore, it is important to consider that because the tool is part of an auditable standard whose purpose is to ensure workers' health and welfare, certainty of its validity is paramount.

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CONCLUSION

From the information covered in this chapter, it can be concluded that the effects related to psychosocial risk factors are multicausal as they result from the interaction of intra-labor, individual and outside-of-work conditions. Therefore, the interventions carried out should consider the working conditions and provide older people with tools to face the situations that arise, thus fostering a work/non-work life balance. This type of interventions mixing the organizational and the individual level have proven to be the most effective for both companies and people (Organización Mundial de la Salud - OMS, 2017). Furthermore, this chapter analyzes the lack of consideration of the psychosocial factors at the workplace and of the importance of their identification, assessment and prevention in the workplace worldwide. In doing so, it highlights the main psychosocial factors to which workers are exposed as well as some of the instruments used for their identification and assessment. It also shows evidence of the psychosocial risk factors impact both on the health of the worker and on the productivity of the company. According to Moreno and Baéz (2010) the psychosocial risk factors to which workers are exposed greatly influence their health (creating physical and mental issues, substance use and psychosomatic disorders) as well as their performance and attitudes towards the organization (their job satisfaction, involvement, commitment and counterproductive behaviors), causing organizations to show high rates of staff turnover, presenteeism, sick leave, work accidents, and low performance and productivity.

Despite the exhaustive literature review, the number of research articles found was insufficient. Thus, the field of research on psychosocial factors in the manufacturing industry presents an opportunity for researchers to work further in the area. In addition, a precise approach for the identification, measurement and assessment of psychosocial risk factors poses the most important challenge for the implementation of the 035 standard and its consideration in companies wishing to achieve a favorable organizational environment that contributes to workers' health care and welfare since much of life is spent at the workplace. Finally, among the psychosocial risk factors identification and assessment instruments, not only are the tools in Colombia the second most recent, but they also feature validation data, which offers a considerable advantage over the other instruments.

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KEY TERMS AND DEFINITIONS

Favorable Organizational Environment: It is the one in which workers have a sense of belonging to the organization. Among other aspects, it features an adequate method for the performance of tasks, clear responsibilities, and proactive participation of workers, in accordance with the Federal Labor Law, as well as performance evaluation and recognition.

Ministry of Labor and Social Welfare (STPS): The Ministry of Labor and Social Welfare, as a Federal agency, is in charge of the performance of the powers attributed to it by the Organic Law of the Federal Public Administration, the Federal Labor Law, and other laws and treaties, as well as regulations, decrees, agreements and orders of the President of the country.

NOM-035-STPS-2018: It is a norm that came into force in October 2018, aiming to outline the elements by which to identify and prevent psychosocial factors and promote a favorable organizational environment in the workplace.

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PRONABET: It is a public policy focused on creating a new occupational health culture in Mexico by promoting emotional care at work and the prevention of psychosocial risk factors that affect workers' welfare.

Psychosocial Risk Factors: These are organizational conditions that are likely to adversely affect the physical and psychological health of the worker.

Psychosocial Risks: They are those conditions inherent in the workplace, which relate to 1) work organization and its social environment, 2) work content and task performance, and which have the capacity to affect the workers' performance and health (physical, mental or social).

Social Support: These are actions to improve social relations in the workplace, in which the mutual support for the solution of work problems among the workers themselves is promoted.

Work Loads: They refer to the work demands imposed on workers, exceeding their capacity. They can be of different types such as quantitative, mental, emotional, and responsibility-related, among others.

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Chapter 70
Burnout Among Formal Caregivers and Risk of Violence Against Institutionalized Elderly

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ABSTRACT

Sociodemographic changes occurring in past decades are reflected as increased population aging, resulting in a higher need to institutionalize elderly. Violence against elderly is a relevant public health problem. The aims of the present cross-sectional exploratory and descriptive study with a quantitative approach were to analyze burnout among formal caregivers at institutions for elderly and to assess the risk of violence against institutionalized elderly. As a part of project ESACA—Envelhecer com Segurança no Alentejo (Prevenir as Quedas e a Violência sobre Idosos)—Compreender para Agir (Aging Safely in Alentejo [Preventing Falls and Violence against Elderly]), the present study analyzed 34 formal caregivers from three institutions that provide care to elderly in the Evora district, Portugal. No situations involving violence against institutionalized elderly were detected. Most participants (96.3%) did not exhibit burnout, although they did report feeling physically and emotionally tired.

INTRODUCTION

Population pyramids have undergone considerable changes in recent years, pointing to demographic aging, with consequent challenges to unprepared governments, families, and communities.

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Demographic aging is a social phenomenon with significant multidimensional impacts that demands urgent reflection and decisions to help adjust social contexts and integrate this new reality with a minimum of negative consequences for citizens while strengthening consensual harmonization. It is not difficult to recognize that healthcare will be one of the sectors most likely to feel the impacts of demographic aging.

Social responses that address a significant number of elderlies are therefore a priority; such response essentially involves speaking about reform in the Portuguese state, and of a period of transition, with a view toward well-being, social protection and social rights. This new paradigm calls for qualified formal caregivers for elderly, with the expectation that better training of the former will result in better provision of care and, consequently, better quality of life and protection of the latter.

According to the Portuguese Association for Victim Support (Associação Portuguesa de Apoio à Vítima – APAV) (2010, p. 41), "recognizing that elderly are victims was slow, but at present it is an increasingly evident phenomenon within the current process of global population aging" (Portuguese Association for Victim Support – APAV, 2010, p. 41). According to The APAV (2013) estimates, 39.4% of elderly in Portugal are victims of aggression. The country is ranked by "the World Health Organization as the fifth among 53 European countries surveyed with significant rates of violence against elderly" (Coler, 2014, p. 19).

Institutionalization might promote the occurrence of violence against elderly, for which reason accurate knowledge of the associated conditions and risk factors is necessary to develop intervention/prevention strategies (Carrilho, Gameiro & Ribeiro, 2015).

Several authors (Jamieson, Teasdale, Richardson & Ramirez, 2010) observed that exposure to stress at work might harm the mental health of formal caregivers, particularly the more compassionate and altruistic ones, resulting in patient exhaustion and impacts on their own personal, family, and institutional lives. Studies on burnout are critical, as formal caregivers of institutionalized elderly are considered a high-risk group as a function of the demands inherent to their job (Meireles, 2016).

The aims of the present study were to analyze burnout among formal caregivers at institutions for elderly and to determine the risk of violence to institutionalized elderly within the context of project ESACA — Envelhecer com Segurança no Alentejo (Prevenir as Quedas e a Violência sobre Idosos) — Compreender para Agir (Aging Safely in Alentejo [Preventing Falls and Violence against Elderly] — Understanding to Act) Ref: ALT20-03-0145-FEDER-000007.

THEORETICAL FRAMEWORK

Aging

Even though defining elderly exclusively based on age is controversial and limited, here, this group is considered to include men and women aged 65 years or older. This notion is accepted by international organizations such as the World Health Organization (WHO) and the United Nations (Paschoal, 2000). Aging is a variable process, and according to "the times, culture, lifestyles, and scientific, medical and technological means, thus are the changes in the aging process" (Imaginário, 2008, p. 41).

Lehr (1998) observed that aging occurs at the biological, physiological, mental, and social levels. According to the National Institute of Statistics (Instituto Nacional de Estatística–INE),

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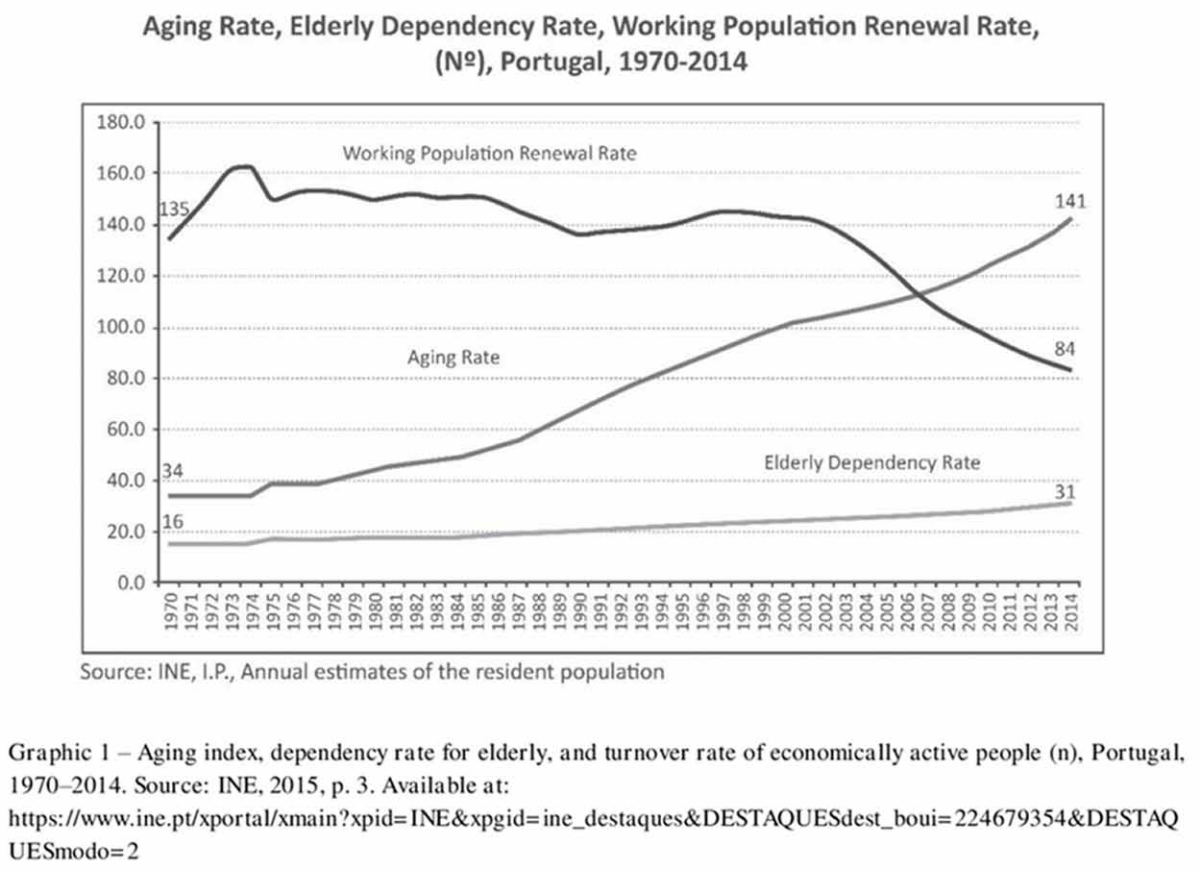
demographic aging expresses changes in the age distribution of a population, denoting a higher proportion of elderly in the population. This dynamic is a consequence of the processes of birth rate decline and increased longevity, and is internationally understood as one of the most significant demographic trends of the 21st century (INE, 2015, p. 1)

As a result of declining birth rates, increased longevity, and reduced mortality, youths and the population of economically active age have decreased in Portugal in the past decades, while the elderly adult population has increased (INE, 2015).

From 1970 to 2014, "the dependency ratio for elderly continuously increased, from 16 elderly/100 people of economically active age in 1970 to 31 in 2014" (INE, 2015, p. 3). In turn, the turnover rate of economically active persons has decreased, especially in the past 15 years: indeed, it has continuously decreased from 1999 onward to become less than 100 in 2010 and 84 in 2014 (INE, 2015) (Figure 1).

Figure 1. Aging index, dependency rate for elderly, and turnover rate of economically active people (n), Portugal, 1970–2014.
Source: INE, 2015, p. 3. Available at: https://www.ine.pt/xportal/xmain?xpid=INE&xpgid=ine_destaques&DESTAQUESdest_boui=224679354&DESTAQUESmodo=2



Graphic 1 – Aging index, dependency rate for elderly, and turnover rate of economically active people (n), Portugal, 1970–2014. Source: INE, 2015, p. 3. Available at: https://www.ine.pt/xportal/xmain?xpid=INE&xpgid=ine_destaques&DESTAQUESdest_boui=224679354&DESTAQUESmodo=2

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According to INE projections for the Portuguese population, relative to the period until 2080, "the peak number of elderly will be reached by the end of the 40s to begin decreasing afterward" (INE, 2017, p. 4). This development is because "larger generations will reach this age range, [generations] already born within a context characterized by sub-replacement fertility" (INE, 2017, p. 4).

Institutionalization and Risk of Violence against Elderly

Increasing population aging, socioeconomic and cultural changes, and modifications in the structure of families in the past decades—reducing their ability to meet the needs of older members—have resulted in an increasing need for institutionalization (WHO, 2011).

Sousa, Figueiredo, and Cerqueira (2004) essentially describe institutionalization as the process of elderly leaving their homes (for a short or long period of time) that comprises the steps of decision-making, choice of institution, and adapting to the new environment. According to Fernandes (2000), institutionalization is a relevant resource for the elderly when considering their general state of health and autonomy.

Throughout the process of institutionalization, elderly must deal with several problems that interfere with their functional autonomy and abilities in various ways (Fernandes, 2000). The consequences of adaptation to institutionalized life might have a positive or negative influence on their quality of life. Institutionalization might be deleterious when elderly are deprived of their daily and family activities and are restricted by institutional regulations (Pestana & Espírito-Santo, 2008).

Institutions that provide care to elderly include different actors (older people, their family, formal caregivers, the community, etc.), and in this context, human dynamics and organizational aspects underlie the actual provision of care.

While institutional violence is a fact, it seldom reaches official sources of information, often remaining restricted to informal complaints. Therefore, the awareness of healthcare professionals and society at large about the risk of violence at medical and social institutions established to protect elderly is crucial (WHO, 2011). Healthcare professionals see some practices as "forms of abuse and neglect and that within the family context, it is worth noticing that some such practices are not considered by them as violent or abusive actions, but are even a part of professional standards and procedures" (Gil & Fernandes,2011, p. 9).

The risk factors for violence seem to be present in all levels of the ecological context of human development, including the interpersonal/psychological, interpersonal/familial, social networks, institutional, community/social, cultural, and historical (Schiamberg et al.,2011). Institutionalized elderly might be exposed to higher risk of violence as a function of their dependence, physical weakness, and ignorance of their legal rights, combined with fear of retaliation for eventual complaints (Dias, 2005).

Formal Caregivers

The rise in population aging and in the frequency of chronic and progressive degenerative diseases poses new challenges to families and institutions for older people and, consequently, also to formal and informal caregivers. Within this context, formal caregivers have "an outstanding role, inasmuch as changes in the family structure often result in the need to transfer the task of caring for elderly to institutions specific for this age group" (Meireles, 2016, p. 1).

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Here, it is worth calling attention to differences between informal and formal caregivers. The former correspond to situations in which care is continuously provided to dependent older people by family members, friends, and/or neighbors, who are not paid and do not have specific training for this task (Silva, 2016). In contrast, formal caregivers have "specific training for the role entrusted to them, and are integrated into the occupational environment according to the particular competencies of each professional, and are paid and/or volunteer at hospitals, hospices, the community institutions, etc." (Meireles, 2016, pp. 8-9). Formal caregivers are therefore professionals with competencies that enable them to implement an intervention based on a holistic approach to aging (Kim, Bursac, DiLillo, White, & West, 2009). They have accurate knowledge of the needs of older people and provide them support in the performance of the activities of daily living (Hartke, King, Heinemann, & Semik, 2006).

The aim of professional provision of care to elderly is to improve their well-being and quality of life and to compensate for transient or permanent functional disabilities whenever possible (Silva, 2016). Therefore, formal caregiving demands different social responses and the involvement of multidisciplinary staff, requiring contributions from qualified health, psychology, and social science professionals, among others.

The inherent complexity of providing care to elderly places high professional, emotional, and personal demands on formal caregivers, which might interfere with their health and often serve as stressors (Ferreira, 2014; Meireles, 2016).

Moreover, inadequate working conditions might be a source of stress for caregivers that might become permanent and contribute to the development of burnout syndrome (Silva & Carlotto, 2008), which is characterized by clear manifestations of emotional exhaustion, depersonalization, and reduced personal accomplishment (Tamayo & Tróccoli, 2009).

While some caregivers who abuse elderly are opportunists or sociopaths, others might simply have an excessive workload (Sibbald & Holroyd-Leduc, 2012), an increasingly common situation in Portugal (Carrilho, Gameiro & Ribeiro, 2015).

Given the constant challenges posed to formal caregivers and the pressures to which they are subjected, there is a need to reflect on the problem of burnout and on policies and practices.

Burnout Among Formal Caregivers

Several studies on burnout "point to the occurrence of exhaustion and fatigue triggered by compassion in the relationship between formal care providers and recipients" (Saúde, 2013, pp. 3-4).

Maslach (2003) observed that occupations involving provision of care are the most susceptible to burnout, as caregivers are required to establish a strong and durable relationship with people often undergoing problematic situations who are full of feelings of frustration, fear, or despair. The tension and stress that result from such relationships might trigger the phenomenon of "emotional dryness," which makes professionals feel empty and emotionally predisposed to burnout.

The notion of burnout was first discussed in 1974 by Herbert Freudenberger within the context of a study with healthcare professionals in which he realized that many of the volunteers at healthcare services gradually developed emotional depletion, loss of motivation and reduced commitment, accompanied by physical and mental symptoms which pointed to a state of exhaustion. Freudenberg noticed that the professionals in such a state of mental and emotional exhaustion were idealistic, seemingly highly competent, dynamic, tireless, and active even when the outcomes they achieved were not those expected (Meireles, 2016).

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Thus, Freudenberger detected the occurrence of continuous stress in the workplace and defined burnout as "wearing out, physical and emotional exhaustion, derived from excessive and highly demanding work in physical, emotional and/or psychological terms" (Ferreira, 2014, p. 10). Burnout syndrome is therefore a "state of fatigue or frustration brought about by devotion to some cause, way of life or relationship that failed to produce the expected reward" (Freudenberger, 1980, as cited in Queirós, 2005, p. 27).

The term burnout is morphologically composed of the words burn and out, "which suggests that the individual affected by this type of stress is physically and emotionally consumed, and evidences manifestations of aggressive behavior and constant irritation" (Meireles, 2016, p. 14). Vernacularly, burnout points to something that stopped working due to absolute lack of energy, and this term might be metaphorically applied to the individuals who have reached their limit due to lack of energy and exhibit a consequent state of physical and mental fatigue. This phenomenon affects countless professionals, and the idea is that of a "candle or bonfire dying out" or a "discharged battery" (Benevides-Pereira, 2002; Queirós, 2005).

In 1974, Freudenberger (as cited in Queirós, 2005) described the following as causes of burnout: low job commitment, lack of supervisor and manager support, high levels of work pressure, age, job characteristics, lack of social support, task uncertainty, low autonomy at work, physical discomfort, and technological changes.

Based on Freudenberger's studies, in their research, Maslach and Jackson (1982) concluded that burnout syndrome has three components:

a) Emotional exhaustion, which involves personal and situational factors. The affected individuals feel an emotional load heavier than that under normal conditions, a feeling of exhaustion which makes them feel unfit in regard to others, deprived of any type of emotional resources whatsoever, which reduces their performance at work.
b) Depersonalization, characterized by the adoption of a rather inflexible and impersonal stance toward others and while performing one's duties. This attitude might be seen as a defense mechanism, in the sense it mitigates the feelings of powerlessness, defenselessness and personal hopelessness.
c) *Reduced personal accomplishment, namely, the feeling that one's job is not deserving of any energy expenditure, that each and any eventual effort to change the profession or move to another institution is nothing but an utter waste of time* (Ferreira, 2014, pp. 9-10).

According to Ferreira (2014), burnout begins with stress and efforts to overcome it, evolving along three stages:

The first consists of an imbalance between the level of stress and the resources to cope with it; the second stage is signaled by the appearance of emotional tension, fatigue and exhaustion. The third step involves changes in attitudes and behaviors, a tendency to deal with clients in a mechanical manner and a concern with personal gratification (Ferreira, 2014, p. 10).

Silva (2016) observes that one should distinguish between stress and burnout, since prolonged occupational stress might lead to burnout. Stress is the result of an imbalance between a caregiver's resources and the demands placed on him or her, although the individual has full awareness of such imbalance and the feeling that he or she might control the situation, which would make discomfort go away (Neto, Areosa, & Arezes, 2014; Bakker, Demerouti & Sanz-Vergel, 2014). In contrast, under a state of burnout,

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caregivers have few personal resources, and it is very difficult for them to confront the situation that causes stress; the negative tension that arises in the workplace compels them to change their attitudes and behaviors (Silva, 2016).

As a result of depersonalization, professionals lose their ability to identify and empathize with the people who seek their help, and do not deal with them as human beings, but as "things," "objects." They tend to see anything related to their job as a disturbance, as just one further problem to be solved (…) Thus contact with people is merely tolerated, and the overall attitude one of intolerance, irritability, anxiety (França & Rodrigues, 2005, p. 54).

Maslach (1976), as cited in Queiroz (2005), describes burnout as a state of exhaustion, expressed as physical and mental fatigue, characterized by a set of strategies adopted by individuals—such as detachment and depersonalization—which change their behavior in the workplace. The emotional demands to which formal caregivers are subjected are the main cause of burnout (Maslach, 2003).

Burnout is one of the most relevant consequences of occupational stress, especially among workers whose job is based on interpersonal relationships.

Indeed, within the context of provision of care to elderly, burnout is common when workers do not have sufficient resources to meet task demands (Silva, 2016).

Providing care to elderly might elicit psychological discomfort and physical illness, resulting in patient tiredness and the worker's feelings of deteriorating health, physical and psychological exhaustion, and consequent burnout (Ferreira, 2014).

Burnout is certainly a relevant issue to consider in the world of work at present, because its consequences are perceptible to the affected individuals, the institutions to which they are affiliated, and the recipients of care, which becomes of questionable quality Studying these aspects substantially elucidates the consequences of the impact of occupational activities on workers at organizations (Silva, 2016).

Several studies have shown that the high demands to which formal caregivers of elderly are subjected in the workplace and their concomitant impact on health translate as high levels of stress. It is worth observing that organizations lack mechanisms to deal with their employees' problems (Saúde, 2013).

According to Maslach (2003), one way to prevent burnout is to promote a compromise between professionals and the institutions where they work to increase caregivers' energy, thereby helping to enable them to perform their job with greater commitment and efficacy.

METHODS

A cross-sectional exploratory and descriptive design was selected for the present study to accomplish the intended aims.

Sample

Participants were 34 formal caregivers from three institutions that provide care to elderly in the Evora district and are participating in project ESACA, Ref. ALT20-03-0145-FEDER-000007 (ESACA, 2017). The participants met the inclusion criteria set in project ESACA: they were caregivers of frailer elderly

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and agreed to participate in the study by signing an informed consent form and had no serious cognitive deficits.

Data Collection Instruments

Considering the research topics and aims of the present study, questionnaires were selected as data collection instruments. The following questionnaires were administered: Copenhagen Burnout Inventory (CBI) (Kristensen, et al. 2005) adapted and validated for the Portuguese population (Fonte, 2011) and the Shirom-Melamed Burnout Measure (SMBM) (Gomes, 2012).

The CBI investigates burnout through 19 questions distributed across three scales:

- **Personal Burnout:** Six Questions that investigate the frequency and degree of physical, psychological, and experienced personal exhaustion, answered on a five-point Likert scale (1=always; 5=never/almost never).
- **Work-Related Burnout:** Seven questions that investigate the degree of physical and psychological fatigue and perceived work-related exhaustion, answered on a five-point Likert scale (1=always; 5=never/almost never).
- **Client-Related Burnout:** Six questions that investigate the perceived degree of physical and psychological fatigue and exhaustion related to work with clients, answered on a five-point Likert scale (1=always; 5=never/almost never).

The total score is calculated by adding the average scores of items; scores equal to or below 3 indicate a high level of burnout.

The SMBM was adapted to the Portuguese context by Gomes (2012), based on the original studies by Armon, Shirom, and Melamed (2012) and Shirom and Melamed (2006). This instrument comprises 14 items answered on a seven-point Likert scale (1=never; 7=always) and distributed across three domains: physical fatigue—questions #1 to #6 (feelings of tiredness in regard to work resulting in reduced physical energy); emotional exhaustion—questions #7 to #11 (feelings of emotional exhaustion in interpersonal relationships, e.g., with coworkers, clients, etc., manifesting as reduced cordiality and sensitivity to other people's needs); and cognitive weariness—questions #12 to #14 (feelings of cognitive exhaustion in regard to work manifesting as reduced attention and thinking capacity). According to Gomes (2012, p. 3) "the score is obtained by adding [the scores] on each subscale items," such that "higher scores indicate higher levels of physical fatigue, emotional exhaustion and cognitive weariness." In other words, "higher levels of burnout are associated with higher physical fatigue, emotional exhaustion and cognitive weariness scores" (Gomes, 2012, p. 3). The SMBM helps to determine the level of exhaustion of the respondent's energy resources by calculating the global score that "results from adding the scores on the three subscales, then [dividing] by three" (Gomes, 2012, p. 4). As these are "merely indicative scores to establish the presence of feelings of burnout (without diagnostic application, as there are not references values available) one might suggest values equal to or over five on the Likert scale ('sometimes') as indicators of problems in this domain" (Gomes, 2012, p. 4).

Procedures

Data collection was performed in August and September 2017.

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Treatment and statistical analysis of the data were performed using the SPSS–Statistical Package for the Social Sciences software (version IBM SPSS Statistics 21.0).

Given the relevance of assessing the sensitivity and reliability of the data, the items corresponding to personal burnout, work-related burnout, client-related burnout, and the SMBM were subjected to internal consistency analysis by means of Cronbach's alpha (α).

Once the questionnaires were administered, analysis of the internal consistency of the various domains of the CBI was performed. The obtained Cronbach's Alpha was 0.894 (Table 1), which indicates that the instrument and its domains are reliable.

Table 1. Internal consistency of the various burnout domains

Domains	Number of items	Cronbach's alpha	Categorization
Personal burnout	6	0.869	Very good
Work-related burnout	7	0.748	Good
Client-related burnout	6	0.863	Very good
Global score	19	0.894	Very good

The internal consistency of the SMBM was also assessed. The obtained Cronbach's alpha was 0.880 (corresponding to the "very good" category), so the global score of the scale and its various items was used for analysis.

The study complied with all the ethical requirements (informed consent, confidentiality, and anonymity) included in the Declaration of Helsinki on ethics in research involving human beings.

All the participants were informed as to the subject, aims, purpose, and possible usefulness of the present study. They received clear information about all the procedures and declared their awareness of the voluntary nature of participation. All the participants signed an informed consent form.

RESULTS

Most participants/formal caregivers at the three analyzed institutions were aged 45 to 50 years old (30%), followed by the age range 40 to 45 (20%), while only 3.3% were 55 to 60 years old. All of the participants were female.

Approximately 56.3% of the sample was married, 31.3% had a stable union, 9.4% were divorced, and 3.1% were single.

Approximately 87.1% of the participants had children, while 12.9% did not. Among the participants with children, 45.8% had two, 41.7% had one, and 12.5% had three. Approximately 78.9% of the respondents did not have other dependents, while 21.1% did (one single participant reported having three dependents).

In regard to their educational level, 45.5% of the sample had completed secondary school, 30.3% had finished elementary education (3rd cycle), 12.1% had completed higher education (BA), and 6.1% had completed the 1st cycle and 6.1% the 2nd cycle of elementary education.

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Most participants had worked in the job for five to 10 years (51.5%), followed by one to five years (15.2%), and 15 to 20 years (15.2%). Approximately 43.8% of the participants had worked in the current institution for five to 10 years, 28.1% one to five years, and 15.6% 15 to 20 years; 2.9% of the participants worked at another institution for a total of 17 hours per week.

Approximately 37.5% of the participants worked in shifts, and 62.5% had a fixed work schedule. The working hours were quite variable: 55.6% of the participants worked 40 hours/week, 29.6% 35 hours/week, 7.4% 42 hours/week, and 7.4% 37 hours/week. Approximately 60% of the sample had permanent employment, and 40% had precarious, fixed-term contracts.

Approximately 33.3% of the participants provided care to elderly admitted to institutions, and 66.7% provided home and institutional care.

Approximately 68.8% of the sample reported having never missed work in the past year, 25% having missed seldom, 3.1% having missed sometimes, and 3.1% having missed work often. Approximately 87.1% of the participants reported having never missed work in the past month, 6.5% having missed seldom, 3.2% having missed sometimes, and 3.2% having missed work often.

Approximately 74.2% of the participants stated that they would not quit their job at the current institution, and 25.8% that they would, given the possibility to do so. Approximately 66.7% of the sample reported that they would remain in the profession, while 33.3% would change their occupation.

In regard to their state of health, 67% of the participants stated that they did not have any disease diagnosed by a physician, while 32.4% did. The most frequent diseases reported were hypertension, musculoskeletal disorders, depression, chronic venous insufficiency, heart problems, and diabetes. Approximately 54.5% of the sample did not regularly take medications, and 45.5% used medications often, 76.5% of them with a medical prescription.

Burnout

In regard to physical, psychological, and experienced personal exhaustion, 88.2% of the participants reported feeling tired "often" or "sometimes," and 8.2% reported feeling fatigue "often" or "sometimes." Feelings of being weak and susceptible to disease were reported less frequently: 44.1% of the sample responded "seldom" and 17.6% "almost never/never."

The participants' responses to feelings of personal burnout were as follows: 58.8% of the responses were "sometimes," 23.5% "seldom," and 14.7% "often" (Table 2). The average score for personal burnout was 3.03, standard deviation 0.71, which denotes a low level of personal burnout (Table 3).

On the assessment of work-related burnout, 47.1% of the participants responded that their job is "always" or "often" emotionally exhausting, and 64.7% said that they "sometimes" felt exhausted at the end of the working day. Nevertheless, 41.2% of the sample stated that they still have time for family and friends in their leisure time. Approximately 65.6% of the participants were classified as being at level 3, 18.8% at level 4, and 15.6% at level 2 (Table 2). The average score for work-related burnout was 3.03, standard deviation 0.59 (Table 3).

Regarding client-related burnout, for 58.85% of the participants, it was "sometimes" hard to work with clients, and 41.52% "sometimes" wondered how long they would be able to continue working with clients. Statistical analysis of the global score showed that 57.6% responded "seldom," 36.4% "sometimes," and 6.1% "almost never/never" to questions asking about frequency of client-related burnout (Table 2).

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Table 2. Burnout global score

	n	Always 1	Often 2	Sometimes 3	Seldom 4	Almost never/Never 5
				%		
Personal burnout	34	2.9	14.7	58.8	23.5	0.0
Work-related burnout	32	0.0	15.6	65.6	18.8	0.0
Client-related burnout	33	0.0	0.0	36.4	57.6	6.1
n – number of valid cases						

The average score for client-related burnout was 3.69, which denotes a low level of this category of burnout. Standard deviation was 0.58. The participant with the lowest level of client-related burnout had an average score of 5, and the one with the highest level of burnout an average score of 3 (Table 3).

Table 3. Sample characterization according to average burnout levels

	n	Minimum	Maximum	Mean	Standard deviation
Personal burnout	34	1	4	3.03	0.61
Work-related burnout	32	2	4	3.03	0.59
Client-related burnout	33	3	5	3.69	0.58
n – number of valid cases					

Physical Fatigue, Emotional Exhaustion, and Cognitive Weariness (SMBM)

Statistical analysis of the global score on the physical fatigue scale showed that it was equal to or over 5 (sometimes) for 35.7% of the participants (Table 4). According to the results relative to the global score on the physical fatigue scale, 35.7% exhibited values establishing the presence of feelings of burnout (however, without diagnostic application, as there are no reference values available) as indicators of problems in this domain.

In regard to cognitive weariness, 16.6% exhibited scores equal to or over 5 (sometimes) (Table 4). Analysis of the global score on the cognitive weariness scale showed that only 16.6% exhibited values establishing the presence of feelings of burnout (however, without diagnostic application, as there are no reference values available) as indicators of problems in this domain.

Statistical analysis of the global score on the emotional exhaustion scale evidenced that no participant exhibited scores equal to or over five (sometimes) (Table 4). Therefore, according to the global score on the emotional exhaustion scale, no participant exhibited values indicating the presence of feelings of burnout.

Next, the global score on the SMBM was subjected to statistical analysis, which showed that 3.7% of the participants reported scores equal to or over 5 (sometimes) (Table 5). According to the analysis of the global SMBM score, only 3.7% of the participants exhibited values establishing the presence of feelings of burnout (however, without diagnostic application, as there are no reference values available) as indicators of problems in this domain.

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Table 4. Global scores for physical fatigue, cognitive weariness, and emotional exhaustion

	n	1 Never or almost never	2 Very infrequently	3 Quite infrequently	4 Sometimes	5 Quite frequently	6 Very frequently	7 Always or almost always
		%						
Physical fatigue	28	0.0	14.3	14.3	35.7	17.9	10.7	7.1
Cognitive weariness	30	20.0	23.3	20.0	20.0	13.3	3.3	0.0
Emotional exhaustion	30	50.0	30.0	13.3	6.7	0.0	0.0	0.0
n – number of valid cases								

Table 5. Global score on the Shirom-Melamed Burnout Measure

	n	1 Never or almost never	2 Very infrequently	3 Quite infrequently	4 Sometimes	5 Quite frequently	6 Very frequently	7 Always or almost always
		%						
Global score on Shirom-Melamed Burnout Measure	27	7.4	22.2	37.0	29.6	3.7	0.0	0.0
n – number of valid cases								

RESULTS DISCUSSION

The results of the present study indicate that the analyzed formal caregivers (96.3%) did not exhibit burnout, although they reported feeling physically and emotionally tired. They feel that their job is emotionally exhausting, and most (64.7%) feel exhausted at the end of a working day. They often (15.6%) or sometimes (65.6%) feel burned out because of their work. It is worth noting that the analysis of the global score on the SMBM showed that one participant exhibited values suggestive of burnout. These results agree with those of the study by Melo, Gomes, and Cruz (1997), who reported high levels of stress related to work overload and suggested eventual consequences relative to job dissatisfaction and the possibility of stress generating pressure and discomfort among caregivers.

As in the previously mentioned study, in the present study, job dissatisfaction was identified, since 25.8% of the sample stated that, given the possibility, they would leave their job at the current institution. In addition, 33.3% would change their occupation. Over the course of the study, we came to understand that the participants' desire to leave their jobs was associated with personal burnout ($r=0.38$; $p=0.025$). This relationship is corroborated by Pereira (2002), according to whom individuals with burnout usually manifest a desire to leave their job. In addition to the employees, institutions might also feel the effects of burnout through reduced employee performance, low job satisfaction, and diminished interest in the profession, which could increase absenteeism and might result in actual exit from the job. Therefore, implementing preventive strategies against burnout that are likely to improve working conditions is essential, as improvements will be reflected in better provision of care.

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The participants' dissatisfaction notwithstanding, they tended not to miss work. Approximately 68.8% of the sample reported not to have missed one single work day in the past year, and only 3.1% stated that they missed work often. This situation became more evident when, upon being asked about absences from work in the past month, 87.1% of the participants responded they had not missed one single day, while only 3.2% stated they missed work often.

Formal caregivers of elderly with considerable levels of burnout exhibit physical and mental health problems and low personal accomplishment, the rate of absenteeism is high, and the quality of the care provided is impaired, resulting in client dissatisfaction (Saúde, 2013). Approximately 32.4% of the participants in the present study reported having diseases diagnosed by physicians, the most frequent being hypertension, musculoskeletal disorders, depression, chronic venous insufficiency, heart disease, and diabetes. Approximately 45.5% of the participants reported taking medications often, 76.5% of whom had a medical prescription.

Approximately 55.6% of the sample worked 40 hours per week, and 7.4% worked 42 hours per week. According to the literature, the working hours are among the organizational factors that might contribute to the development of burnout syndrome, especially when workers are continuously forced to change their work schedule over a short period of time or to work shifts (Patrick & Levery, 2007).

CONCLUSION

Violence against elderly is an alarming public health problem that amounts to explicit violation of human rights. There is an urgent need to analyze the risk of violence against elderly and to formulate healthcare policies and community intervention strategies to minimize this problem. It is also necessary to dispel the negative stereotypes associated with aging and to change the current way of conceiving of and perceiving aging to increase the social value of elderly and the attention paid to problems related to their rights and needs.

Analysis of the results of the present study evidenced a low risk of violence against the elderly admitted to the three analyzed institutions in the Evora district in association with burnout among formal caregivers. Most of the caregivers (96.3%) did not objectively exhibit burnout, although they reported feeling physically and emotionally tired. It is worth emphasizing that tiredness is not a synonym of burnout, as the latter consists of a state of emotional exhaustion, depersonalization, and reduced personal accomplishment. However, a small proportion of the sample, 3.7%, exhibited levels compatible with burnout, which might represent a risk to the elderly under their care.

Organizations should be able to manage situations characterized by physical and emotional fatigue, prevent burnout, perform periodic evaluations of employees through appropriate instruments, and formulate and adopt measures to minimize and prevent these situations. In this way, they will help improve working conditions and, consequently, the care provided to elderly. Institutions are responsible for implementing policies and organizational management strategies to prevent burnout among formal caregivers and thus to help avoid the occurrence of violence against institutionalized elderly.

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Chapter 71
The Impact of the Attitude of Medical Staff From Burnout on the Level of Ongoing Medical Services

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ABSTRACT

This chapter describes how contemporary, dynamic development in all available human areas is unavoidable and necessary. However, along with the benefits and progress made by civilization, there is also a growing margin of vulnerability and unfavorable price developments. Professional burnout is becoming a global problem. It identifies the limits of current human capabilities to the serious phenomenon. In particular, nurses and medical rescuers, who are in direct contact with the patient, experience unpleasant symptoms of burnout.

INTRODUCTION

The concept of burnout is a very trendy, popular and widely used term. Basically, the term can be seen as the mark of the modern times. Although originally, we have been in contact with this phenomenon (not yet a concept) in the story of Graham Greene, *A Burn-Out Case*. That is where the author presents the main character who openly demonstrates his "overall fatigue". Despite his professional fame, financial and, you would think, social comfort he is definitely forced to declare that he has had enough. His psychosocial fatigue has brought him to a situation where he reevaluates his life and views. The decision of social alienation and living deep in a bush, away from the civilization echoes is not as much an escape as a way of saving his being, the wreckage of his suffocated *ego.* Later, as a result of the carried out analysis and research, psychology would call that way of dealing with stress a reset, which restores an emotional balance. In the literature that was the first case of such an immeasurable revealing of a burnout symptom (Schaufeli, Enzman, 1998).

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The emergence of the sole concept of burnout is not an artificial stimulation. That term rather constitutes the outcome of a spontaneous, but evolving problem of specific occupational groups. In principle, it should be assumed that used for years ordinary term or a metaphor has been an anchor to bring attention to the existing internal problem of escalation of the professional life on a human being as the biopsychosocial entity. Something what for years has been existing as a jargon of specific professional environments has become the subject of scientific researches (Smith, 2007). Initially, psychology considered that concept as very detached and not quite serious, not having enough essential foundations to undertake any detailed analysis. Basically, the problem of inability to deal with professional aspect of life and a very wide influence of its debilitating effects on many other areas of human life have forced contemporary psychology to look into the problem of burnout (Anczewska, Edwards, Roszczyńska, 2005). It has been a quite bumpy road to achieve the scientific psychology acceptance of the fact of the burnout phenomenon. Substantially, that was partially caused by the "victims" themselves. That would be embarrassing for stockbrokers or lawyers to shout out loud their tiredness and fatigue. Such behavior could have a negative influence on their professionalism and might significantly diminish the rank of their position. Moreover, even nowadays such a recognition of human frailties is considered to be inappropriate and socially denuding or unacceptable in certain professional groups (Maslach, 2001).

Whereas the first reliable descriptions and analysis of the stress effects and the use of the concept of burnout appear in the second half of the 20th century. They were concurrently, but independently of each other introduced to the scientific terminology by a psychiatrist Herbert Freudenberg and social psychologist Christina Maslach in America in the early 1970s. First time, Burnout Syndrome was described by Freudenberger in 1974. While he was working with juvenile drug addicts at New York facility with a group of committed and idealistic volunteers recruited from young Americans, he observed gradual loss of their charisma, motivation and charity commitment leading to the presence of many psychosomatic symptoms. Such a very dynamic and strong dedication to work for the entire year within that specific environment led them to apparent exhaustion, which he called a "burnout". This term was commonly (but highly accurately) used there to describe functioning of people who have been addicted for a long time (Freudenberger, 1983).

Maslach has explored the phenomenon of burnout in slightly different way. While working together with her colleagues from the University of Berkeley and conducting extensive research among working in stressful occupations people (including social workers, psychiatric nurses, lawyers providing legal advice and assistance to the poor, clinical psychologists, psychiatrists, prisons' employees), she tried to determine how they deal with their work related emotional tension. She was interested in the types of techniques they were using to successfully distance themselves from their clients' or patients' problems, and what were the personal and social consequences of applying those techniques (Maslach, 1993). Collected data revealed that many people – by analyzing their own professional experience – reported their emotional exhaustion and weakened feelings, increase of negative perception and patient misconduct and, as a result of those emotional tensions, apparent signs of professional competence crisis. Many of them suggested the reduction or gradual loss of empathy towards others. During the presentation of the study outcomes one of the lawyers has called this specific phenomenon a "burnout". The term has been picked up by other participants, and then – not without the mentioned above obstacles – introduced to the psychological literature (Maslach, Schaufeli, 1993).

Today, the burnout occurs commonly in modern organizations, although most often is not considered to be an organizational problem at the workplace. Common thinking about the professional burnout is focused on employee and his weaknesses related to dealing with his psychological difficulties. Whereas,

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the burnout syndrome is strongly associated with the stress inducing place of work and the chronic emotional burden experienced by the employee. People working under such a long lasting, permanent stress begin to experience a lack of harmony between themselves and organization, what leads to losing their motivation to continue working with the previous commitment. The effects in the form of symptoms of burnout are not only the entity's personal problem, but they cause some measurable costs for the organization, thus the phenomenon of burnout becomes a major social problem. Therefore, the issue of burnout, in the context of organizational pressure, demands some broad researches and practical advices for the modern working environments. The past decade has brought a dynamic scientific, academic progress in the broad concept of the burnout occurence. We have already known that term does not apply to all occupational groups. There are certain conditions that must exist to initiate the process of burnout. The truth is that there are no "secure" professions free from the problems of stress, but definitely, it was found that certain groups of professions are almost doomed to a constant rubbing risk of the burning out. The group of professional health care workers has become a basis for hundreds of studies conducted and initiated by Maslach. They have been conducted on physicians of all specialties as well as nurses, paramedics and physical therapists. Studies have proven that they belong to a high-risk group of people particularly susceptible to a work-related stress, what is a specificity of their profession. So let's stop for a moment and take a closer look at the problems concerning people who are saving others' health or lives, but more often, in an uncontrolled way, force themselve to reduce the quality of their own lives at the expense of both their physical and mental health. There should be implemented an analitic method of studying the origin of the burnout syndrome formation in order to understand the threat resulting from the job-related stress or unnatural, excessive involvement at the work life. In my opinion, the most reliable model in this matter is the one developed by Christina Marslach, which is the most exact, illustrative and, at the same time, the most refined.

It includes three basic dimensions: (1) emotional exhaustion; (2) depersonalisation (3) decreased satisfaction from the achievements.

1. **The Emotional Exhaustion:** A feeling of excessive fatigue and emotional exhaustion of resources. Characteristics for this dimension are: a sense of general fatigue, a lack of natural energy and zeal to act, no joy of life, increased irritability and impulsiveness. There are some signs of the need of greater efforts to perform professional tasks. Thera are also many other psychosomatic symptoms. The main the causes of exhaustion are: an excess of duties and conflicts at work. On the professional level, a person feels exploited and exhausted, and at the same time, does not see the possibility of recuperation. He most often complains of the lack of energy to start a new day and meet people, whom he is supposed to help. In the psychological aspect, it is observed the loosening of emotional bonds with his mentee, which often is demonstrated by a loss of attachment and intimacy.
2. **Depersonalisation:** This term has a different meaning from the one accepted in psychiatry. It defines the specific attitude towards other people, which is expressed by the negative, cynical, excessive interpersonal dissociation, and often the loss of idealism. Relationships with others lose their previous personal character, become impersonal, de-identified. Depersonalisation is derivative of an excessive emotional exhaustion. It can be seen as a form of self-defense by creating emotional indifference buffer to protect himself from any interactions. However, there is a risk that the attitude of indifference can lead to an apersonal attitude toward others and dehumanization.
3. **Diminished Satisfaction From the Professional Achievements:** Manifested by decrease of the sense of competence and work productivity. This reduction of the sense of self-efficacy and ef-

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fectiveness may be associated with one's depressiveness and difficulties in dealing with the job requirements, and the stress associated with performing the professional duties.

The situation may be worsened by the lack or insufficient support from the environment, as well as neglecting the improvement of professionalism and competence. The existing state of professional apathy can be associated with a sense of meaninglessness and resignation attitude. The employee demonstrates the increased feeling of inadequacy and the lack of skills which are necessary to assist his customers. As a result, that may lead to erroneous beliefs in his own worthlessness.

All mentioned above symptoms in conjunction with the circumstances of their occurrence create a distinctive syndrome of bad adaptation at work. On its grounds is the exhaustion caused by excessive burden of the employee. It is noted that the advantage of the three-dimensional model is the appropriate expounding the sources of experienced stress in the weave of social conditions, which allows you to distinguish the burnout from other, non-work related unpleasant experience and stress. The main interpersonal relations at work, including relationships with patients, colleagues and managers, are the most important in the process of burning out. However, please note, that they can be both a source of emotional tension and gratification or motivation. In the latter case, they become helpful (especially if they carry a positive aspect) in dealing with job related stress and the effects of the burnout. Maslach (1982) emphasizes that, if the examination of the phenomenon of burnout is limited only to emotional exhaustion – bypassing the depersonalization and the job dissatisfaction-it will lose the full picture of socially important phenomenon. A 3D model of the burnout, proposed by Maslach, is widely accepted and the adopted dimensions have become widely used by different specialists in various polemics about the job-related stress. Maslach points out that even in a situation which does not clearly refers to this model, the established terminology is used in many discussions and scientific works or is synonymous to what she has proposed. However, the source and effect remain the same. For example, the exhaustion sometimes is known as an attrition, loss of energy, fatigue, weakness. Depersonalization is a negative or inappropriate attitude to patients, loss of idealism, annoyance, and lack of professional satisfaction shall be replaced by terms: decreased productivity or capacity, lowering morale, withdrawal or inability to deal with work responsibilities (Maslach C. 1997).

Analysis of the latest research, taking up the issue of the burnout structure, points out a tendency to describe the three-extracted basic dimension of burnout in more general terms than it was done in the original version. The sole emotional exhaustion is not talked about, but is generally about exhaustion, which applies to both aspects, emotional and physical condition.

Depersonalisation-expressed by an unfavorable change in attitudes towards patients-is replaced by the designation ' cynicism ', pointing to the coolness, distance and indifference attitude towards their own work, and also towards their students or clients. The lack of professional satisfaction is replaced by the designation of the inefficiencies of what connects the notion of professional inadequacy and loss of confidence in their own abilities. This change in terminology, in a large extent, is dictated by an attempt to develop a more general concept of burnout, and of not restricting it only to the competition, which took place in the initial period of this phenomenon studies.

In fact, there is no ordinarily accepted definition of burnout. In general, we can say that it is an extended reaction to some prolonged active emotional and interpersonal work stressors (Maslach 2001). Freudenberger and Richelson defines the burnout as a state of fatigue or frustration resulting from dedication to some matters, way of life or to a relationship, which did not bring the expected rewards (Pines, 2000). The multidimensional concept of Maslach is the most popular. According to the author burnout is

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a psychological syndrome of emotional exhaustion, depersonalization, and diminished sense of personal achievements, which can occur in people who working with others in a specific way (Maslach, 2000). The emotional exhaustion is the feeling of excessive emotional load, tiredness, emotional emptiness, the lack of mental and physical energy. It is the most striking symptom of the syndrome. The term depersonalization, unlike the one in the psychiatric tradition, refers to negative attitudes towards patients, clients, students, alumni, tendency to treat children in a neutral, impersonal, cynical or contemptuous way. Perhaps, in order to avoid confusion, it could be better to use the term depersonalization in Polish or to propose the term dehumanization. Depersonalization in the psychopathological sense is a condition, while in the case of a dimension of burnout it means the dynamic defense process of standoff towards recipients. This dimension of the team in a special way, emphasizes its interpersonal aspect. The third component of burnout is the tendency to evaluate their own work in a negative way, professional skills and accomplishments. The English term a reduced personal accomplishment is usually translated as reduced sense of personal achievements, however, it sometimes is used in the context of the reduction of the personal job involvement, a diminishment of personal achievements or reduced satisfaction. Sęk believes that the present state of knowledge does not allow for a rigid use of one term (Sęk, 2001). According to Maslach athe burnout affects mainly the specific occupations representatives, w providing social services and requiring a close direct work with people, personal involvement in the interpersonal contacts, which are often associated with helping others, and in which their social skills are the essential tools. These are the jobs subscribed in English as human services or helping professions. They include doctors, nurses, psychologists, social workers, teachers, educators.

An alternative understanding of the burnout was proposed by Pines and Aronson. According to them it is a state of physical, emotional and mental exhaustion, caused by prolonged involvement in various burdensome emotional situations. The authors mention about three dimensions of this syndrome, however, all come down to one, the exhaustion. Discussion becomes The separation of understood that way the burnout syndrome from the exhaustion strongly related stress becomes controversial (Schufelli. 1998). According to Pines and Aronson the burning out also occurs in professions that are not targeted to working with people, as well as in situations unrelated to work. For example, it may apply to the marriage or long term aquaintance and friendship. The following definitions of Burnout vary in the scope of their concepts and amount of the marked dimensions. Some include dynamical burnout, rather as the process of burning out (such as a three-step Chernissa's model) (Burke, 1995). Schaufeli and Enzmann (1998) proposed the following definition: Burnout is persistent, negative work-related condition, occurring in persons generally healthy. It is characterized mostly by exhaustion, accompanied by psychological and physical discomfort, a sense of reduced efficiency, diminished motivation and dysfunctional attitudes and behaviors at work. This condition develops gradually. and comes from the discrepancy between the intentions and the realities of the profession. The burnout often is a self-reinforcing process due to inadequate coping strategies. This definition captures the most important aspects of the syndrome, sums up the content of the definitions by other authors and some therapeutic implications. Difficulties in determining the order of appearance of individual expressions of the burnout and their correlations are partially related to a small number of studies. The prevailing view, where the necessary factor to initiate an adverse phenomenon leading to a burnout is work related stress resulting from the lack of balance between the work requirements and the human capabilities, and especially with the load the problems and also resulting from patients, students, pupils, interpersonal work expectations. The crucial sense might have a feeling of the great discrepancy between the expected work-related ideals and the true requirements, the reality of the profession. In this case, the burn out would mostly affect the most

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motivated and idealistic newcomers at the beginning of his career, sucriphising way too much energy to fulfill their unrealistic expectations. Freudenberger notes, for example, that the burnout occurs about one year after the start of work (Freudenberg, 1974). An alternative approach assumes the burnout is a final result of chronic exposure to stressors at work, and appears later. The empirical researches show that indicators of the burnout are fairly stable in course of time, what supports the latter concept. Stress is necessary, but it is not a sufficient condition for the burnout development. According to Sęk, the burnout is not as much a direct result of chronic stress as it derives from an non-modified stress of your own proactive activity (Sęk, 2000). The basis for the burnout development is the widespread experience of failure in dealing with stress. In the classic model of burnout, proposed by Maslach and Leiter, in case of a staff member whose adaptability in dealing with stress have collapsed, initially there is an emotional exhaustion development. Being unable to cope with this status the employee begins to resist some of the too close, meaningful relationships with his recipients by increasing emotional distance, demonstrating more and more callous, indifferent treatment and their depersonalization. The consequence of this unreliable defensive strategy is the lack of job satisfaction, the tendency to negatively assess their own performance and diminished commitment. This is a sequential model, in which the individual dimensions of the burnout appear in a specific order, are interrelated, mutually reinforcing. Golembiewski proposed the model called phase (Golembiewski, 1998). At the beginning the agitation appears, followed by a reduction of the sense of personal achievements, and emotional exhaustion. The author also suggests that the three dimensions of the burnout can develop at the same time, but independently of each other, giving, as a result, eight patterns or phases of the burnout. Perhaps the relationship between dimensions of the burnout vary in each group. In Sęk's study there is a sequential, selfstrengthening structure with an emotional exhaustion at first, leading then to the depersonalization and consequently to reduced sense of personal achievements among nurses, while in the group of the surveyed teachers the individual elements of the syndrome are independent of each other.

There still is a remaining open question about the separation of the burnout syndrome and the types of connection with other status and mental disorders. The subject of controversy is especially a differentiation of the burnout and stress, depression, reduced work satisfaction and chronic fatigue syndrome (Bakker A.B. 2000). Current researches do not allow for a clear resolution of this issue. Burnout is usually seen as a specific form of response to stress. However, it seems that these are separate phenomenon, because: Burnout is a long lasting process, emerging as a result of a work related stress with the collapse of adaptability, and the strength of that emotional exhaustion highly correlates with stress, however, depersonalization and reduced sense of personal achievements are not listed among common stress reactions and show only little or moderate correlation with the stress, the burnout depends on the original motivation and high job expectations, while stress can be experienced by each individual regardless of the motivation level. Therefore, the burnout is rather a chronic, multi-dimensional response to the stress, which especially the second and the third dimension are specific. Many of the burnout symptoms can also occur in depression. Like in the stress, there is a quite a strong correlation between depression and emotional exhaustion, and the other two dimensions are much weaker (Schaufeli in 1998). Probably they are congenial, but separate states. However, the stronger are signs of burnout, the greater the resemblance to depressive symptomatology. It's also possible that similar personality factors promote both states (Iacovides. 2003). The main difference between them is that depression penetrates all aspects of life, whereas the burnout is limited to the job, leaving the functioning in other areas of life unchanged, at least in the initial period. The symptoms of chronic fatigue syndrome might be similar to the burnout, but in the clinical picture they are dominated by physical ailments and mental accompany

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them. As in the previously mentioned states, the similarity of burning refers primarily to emotional exhaustion, the other two dimensions do not exist in the chronic fatigue syndrome. Satisfaction is a congenial term and it has a longer history than the burnout. It negatively correlates in a moderate way with emotional exhaustion, slightly negatively with depersonalization, and positively, though insignificantly with a personal commitment. So, these are the concepts related to each other, but the interpretation of the mutual dependencies remains contentious so far. It is not known whether smoking is the cause of the lack of professional satisfaction, or a reduction job satisfaction contributes to the onset of burnout. It is possible that both burnout and reduction of work satisfaction are caused by a common factor, for example, bad working conditions. The burnout, and especially its dimension of personal commitment, needs to be distinguished from the original lack of engagement, as both the states might be similar in their external manifestations. According to Sęk, the knowledge about burnout sometimes might be a specifically cognitive overbuilt defensive pattern against the original lack of professional engagement. It is believed that the burnout might develop only in people with high levels of their initial motivation. The term exhaustion assumes prior state of high arousal. To burn out, you have to first burn. There are some present discussions on the issue of the inclusion of burnout syndrome to the international classification of diseases and related health problems. Wiesmuller and his associates postulate to include the burnout syndrome to a somatic group of disorders (Somatoform Disorders). In the classification of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) it is the category designed phenomena that does not meet the criteria of mental disorders, however, require attention and treatment. It describes many job-related problems: lack of job satisfaction and uncertainty concerning the choice of career. The ICD-10 of mental and behavioral disorders places the burnout among some factors affecting the overall health status and contact with health services (Vesalius 2000). The developed to date tools allow us to compare the level of the burnout to different study groups. However, except the arbitrarily adopted statistical criteria of objective standards, there is no specific criteria taking into account some national and cultural specificities, that would allow to properly diagnose it. The presumption is that cultural factors play a significant role, because the hitherto conducted studies reported significant differences in burnout terminology in various countries (Turnipseed DL. 1997). In general, studies conducted in the United States reported a higher average level of emotional exhaustion and depersonalization than the one conducted in Western European countries.

The results obtained from the study of population of Polish nurses were closer to American indicators, which are higher than in most of the studies conducted in Western Europe (Schaufeli in 1994). At the present stage of knowledge, the MBI questionnaire or any other tool are not suitable for diagnostic purposes. To change that it is necessary to determine clinically relevant border points, by comparing the results of self descriptive questionnaires with an independent assessment of psychologists or psychiatrists. Some studies confirm the usability of the MBI questionnaire in an individual assessment of burnout.

Some temporary, requiring further verification, diagnostic criteria were elaborated only in the Netherlands. The preliminary estimates show that about 4% of the Dutch working population suffers from the clinical burnout syndrome.

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WORK-RELATED AND THE INSTITUTION ORGANIZATIONAL STRUCTURE FACTORS

In this group there are included some work requirements and resources: their deficiency or absence (Bakker AB 2003). The lack of comfort and free access to the tools necessary to obtain the proper working effect is very significant. Extremely important is an employee's feeling, that with appropriate equipped technical and substantive support he can sustain the quality of his work. This is one element of this group. However, it is also important the sole work demand as it relates to the colloquial sense of being useful, being a part of a whole.

The Job Requirements

Among the job requirements there are work-related stressors and also stressors arising from the peculiarities of working with people. This distinction is important for theories of burnout, because if it is to be specific for the social service professions, the second group of factors should play a greater role. The stressors associated with the profession are: workload, time pressure, which is too much work to do in a too short time, role conflict and role ambiguity. Role conflict occurs when you meet at work, contrary to the requirements of, put up with for example. the role of educational and disciplinary action. The ambiguity of roles associated with the lack of necessary for performance of work information and lack of clarity as to the purpose of work and responsibilities. Workload and time pressure are strongly related to emotional exhaustion, with depersonalization and a sense of personal achievements. The physical exhaustion is often an inflammatory factor of diminished emotional performance. In addition, the conviction about performing this job on a regular basis, periodically working for another person or performing duties that go beyond his competence can be demotivating. This leads to the very troublesome situation and confirms the fact that role conflict and role ambiguity exhibit moderate or strong relationship with burning out. Among the arising from the peculiarities of working with people stressors are listed those usually in direct contact with customers, patients, students, their number, the load of their problems, the confrontation with suffering, death and with aggression. A lot of research, contrary to the intent of the theoretical, not confirmed by stronger depending on the burn from this group of factors (Schultz, 1995).

The Lack of Resources

Resources include such factors as support, feedback, autonomy at work, participation in decision-making, control of their own work, remuneration, career opportunities. The most common tested of these factors is the support from his superiors, colleagues or other people (Halbesleben., 2004). Support, especially from his superiors, is negatively correlated with burning out, however, much less than the requirements of the work. Other factors included in the resources also correlate (as expected) with all the dimensions of burnout, the strength of these compounds in the various studies is often small. Some authors suggest that the work requirements are stronger related to emotional exhaustion and the resources mainly with depersonalization and a sense of personal achievements, however, the results of research are not always clear and in this respect not always confirm assumed findings (Leiter MP. 1996).

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Individual Factors, Demographic

As regards age, more burnout cases are observed among younger individuals. Perhaps this is related to a painful confrontation between dreams and expectations with reality, or with lack of experience. That cannot be excluded that your burned out employees just abandon profession quickly, so in an older group remain those who know how to develop the adaptive mechanisms. Conflicting test results regarding a gender (Leiter MP., 1996). In part the study women gain higher scores on a scale of emotional exhaustion, and the men on the scale of depersonalization. In some studies, single people have higher indicators of the burnout than the ones living in relationships. Slightly higher levels of the burnout can be observed frequently in people with higher education. Perhaps people better educated have higher expectations and take up a position with bigger responsibility. In a substantial part of the research, however, do not seem to be any significant relationships between demographic variables and indicators of Burnout (Maslach, 2001).

Personality Factors

The impact of personality factors was less studied than situational factors, however, certain dependencies are described in the literature fairly consistently. People with low levels of so-called mental resistance are more vulnerable to the burnout process. People mentally resistant are characterized by a tendency to strongly engage in what they do, openness to changes, interpreting stressful events as challenges, and a sense of having a full control of different events and their own lives (Heszen-Niejodek, 2000). Burnout rates are usually higher in people with an external location of source control, coping with their stress in a passive way. The self-esteem correlated with all dimensions of the burnout is low, but it's hard to tell if it is a disposing factor to burnout or rather its consistency. The researchers quite often studied five factors of personality called the big five by Costa and McCrae. These studies show that the burnout promotes mainly high level of neuroticism.

This dimention includes: anxiety, hostility, depression, impulsiveness, sensitivity and shyness (Leiter MP., 1996). According to Sęk's studies the symptoms of conditions predisposition to burn are: the tendency to judge the situation in terms of risks, a mechanism to avoid the difficulties and irrational beliefs, while the immunizing are: general sense of self-efficacy and cognitive control based on the positive experiences focused on the individual's changes. Correlations between burnout and a sense of coherence or sense of meaning in life has been studied relatively rare (Söderfeldt M 2000).

Work Related Attitudes

High, unrealistic expectations to work were very often cited as one of the main factors conducive to the burnout. Conceptual confusion and methodological differences may be the reason of the lack of conclusive research results. In fact, not always legible is to distinguish whether the expectations relate to the characteristics of the sole work to be enjoyable, interesting, or to the results of the learning progress of students, the recovery of patients, or the possibility of success, achieve significant (Schaufeli in 1998).

An attempt to systematize the issue Burnout is important. It allows to capture the problem in the most figurative way. However, it is essential to know the causes of pressure which yields an individual, which uncontrolled and not eliminated on time lead to psychological and physical breakdown, loss of balance

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and necessity to change the present life and way of thinking. The most common reason is stress. In any form, in any quantity, especially the long-lasting.

The phenomenon of stress is currently one of the most popular topics of both conversational considerations as well as scientific researches. Therefore, the term stress is no longer just scientific, though undoubtedly calls for the scientific description and precise clarification, as it is responsible for a variety of disorders of human functioning. Research on stress shall be taken in such disciplines as psychology, sociology, anthropology or widely understood medical science.

In accordance with the recognition of the term, stress means "the state of the burdening of the system of psychological adjustment, occuring in dangerous situations, hindering or inability to implement the individual's important objectives, targets, values." Many scientists understand the phenomenon of stress just as the situation that arises when the individual's challenges and external circumstances exceed its ability to cope with perceptual stresogenic situation.

In a variety of approaches, however, slightly different emphasized the importance of the selected aspects of stress. One of the first considerations on stress was run by H. Selye, focusing on the physiological meaning of stress and specifying this phenomenon as a status of the body, with a non-specifc physiological changes that respond to certain body challenges. In this approach, the stress is a part of Cannon's concept, developing the idea of homeostasis or balance, and acknowledging that stress is the result of internal disorders of homeostasis, and resistance to stress is associated with the ability to maintain the stability of the internal environment (homeostasis) conditions being subject to different stimuli. The author has used the concept of stress for the determination of the reactions of the body as a kind of fight, search methods, defense or escape from the unfriendly elements of sterss builders. All that in order to restore the balance of the body to minimize or eliminate the operation of various factors of pressure.

In another sterss research they clearly expanded scientific studies on the psychological aspect, what started the stage of understanding stress as a psychological category. In that approach they have studied the different emotional disorders experienced by anindividual in some life-threatening conditions or experienced difficulties in interpersonal relationships and tasks. It was noted that situations do not have to be especially threatening to worsen the mental functioning of the human being. The problem occurs in everyday life, in fact, is associated with various factors, which arouse in each individual. Often there are situations, in spite of all its (assumed) destruction, very effective, stimulant, constructive, forcing the above-average activity.

Stress was also featured as a result of the difficult situation in which there was a discrepancy between the tasks or the needs of man and the possibilities to perform these tasks or meet the demanding the needs fulfilment.

In the classical approach to stress there should also be brought up the trading model developed by R.S. Lazarus and s. Folkmana, who put emphasis on individual's interaction with the environment, a subjective rating this interaction by the individual and following the type of activities undertaken by the individual acting in a stressful situation.

In analyzing the phenomenon of stress you should also pay attention to the approaches attempting to reconcile different perspectives, in order to fully and multifaceted characterize this phenomenon. This way, J. Strelau developed definition of stress reconciling the physiological approach (centered around ˆphysical response to the stress) and the interactive approach (stressing the body's reactions to external stimuli). The author suggested to define stress as "the state consisting of strong negative emotions and the accompanying by some physiological and biochemical changes, excessing the normal state of arousal".

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It should also be taken for consideration the definition of stress proposed by P. G. Zimbardo and F. Rucha who in their analysis of stress have noted that the causes can varied, and most importantly, both in a pleasant and an unpleasant way. Their essence is that they all require changes, and consequently re-adapt to the situation. The authors stress that, regardless of the source of stress biological body's reactions are always the same, and therefore an individual throughout his life span will face the stress and its consequences, whenever he has to confront some new requirements.

Based on various observations of people behaviour in stressful situations Lazarus pointed out three significances of this phenomenon:

- **Load:** Understood as the external stimulus;
- **The Pressure:** Referred as an internal reaction triggered by a stimulus;
- **Voltage:** Understood as a disorder.

This way, the author has defined stress as a highly subjective phenomenon, because the variety of stimuli stressors and subjective evaluation of the events by the individual makes stress something strongly individualized and difficult to determine. It is important, however, that in their mutual interactions between the individual and the environment take into account both the requirements of the environment, as well as individual people deal with committing events (Lazarus, 1999).

The last consideration on stress popularity won the concept stress Hobfolla, referred to as the theory of behavior resources (COR). In this approach, the author is looking for general principles that guide the deliberate human behavior. Defines them as the desire of individuals to maintain, protect and contribute their own resources. To create for them the enclave of untouchability and controlled. Resources and are understood as valued by the items, personal property or the circumstances, experiences. According to the author the man continuously tries to acquire resources, which does not have yet, keeps the ones he already has got, and protects those who for some reason are subject of risk. And therefore, the source of stress is an imbalance in the exchange of resources between the individual and the environment (Hobfoll, 1998).

As you can see, the evolution within the meaning of the phenomenon of stress is associated with multidisciplinary approaches. However, regardless of the differences in this matter, today's psychologists understand stress as a result of any stimuli, both positive and negative, that might be the cause of the disorders and psychosomatic diseases, but they can also mobilize the body and provide an opportunity for human development.

Work is natural for man and desired activity. However, since ancient times, there have aroused very ambivalent emotions, positive or negative. Depending on the circumstances and of the purposes can be used, to support the development and provide satisfaction, but it can also be a pathogenic agent, be a source of tension the emotional illness, disorders in social and family functioning of the human being. Work-related stress (stress professional) is a very serious problem not only for individuals experiencing stress, but also for organizations and society as a whole. The results many studies are very disturbing, because professional stress is a phenomenon very common, but also indicators of work-related stress are constantly on the rise. It indicates the fact that, over the past several decades of professional stress levels alarmingly increased. This applies mainly to industrialized countries, and manifests itself in the rapidly growing indicators of sickness and incapacity for work caused by stress. Each work may be a place where the employee comes into contact with stressors causing the state a strong tension. Thus, each work can be a source of stress. Stress factors related to work are classified in many ways. Synthetic cap ture proposed by Stranks (Stranks J. 2005), groups professional stressors into three categories:

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- **Environmental Factors:** The conditions under which a given unit came to work, for example noise or air temperature;
- **Professional Factors:** For the same work, responsibilities and requirements, the amount of work and the scope of control over the tasks;
- **Social Factors:** Contacts with other people, your colleagues, but also with your friends, your loved ones outside of the organization.

David Fontana also has identified three groups of work-related stressors, subjecting them to more detailed split (Fontana, 1991):

1. **Organizational Problems:**
   a. Lack of support for the employee,
   b. Long and inconvenient working hours
   c. Low prestige, wages and promotion prospects,
   d. Unnecessary rituals and procedures
   e. The uncertainty and lack of a sense of constancy
2. **Work-Related Problems:**
   a. Difficult customers or employees/colleagues
   b. Inadequate preparation
   c. The liability associated with the work
   d. Inability to efficient operation of or the provision of assistance to another,
   e. Work overload or underload
3. **Specific Causes of Stress:**
   a. The ambiguity of roles
   b. Role conflict
   c. perfectionism
   d. There is no impact on the decisions
   e. Frequent conflicts with superiors
   f. Lack of support from colleagues
   g. Monotonous work
   h. Poor communication
   i. Inappropriate targeting
   j. Conflicts among workers

Organize work-related stressors can be shot n. hop, in which the author clearly presents their categories. This is the content of the work, work conditions and social relations at work. The table shows the most important stressors, belonging to each of these categories. Based on this statement, and earlier, for example, cited the classification, it can be concluded that the source of stress may be factors from different areas of the functioning of the professional man. Literature review, we can conclude that most of the studies on stress has been focused on the content of the work and working conditions. Today, while the plane relevant search becomes an area of human relationships.

Regardless of the category of the stimulus may show different types of physiological and emotional response to stress. In people who experience high levels of stress. There are many symptoms of psychosomatic and stress relieving capacity of the disorder and rest from work. In a number of studies have

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demonstrated that the greater stress professional experience, this has less satisfaction with work, and greater dissatisfaction with its implementation. Often feel also a sense of failure and incompetence, leading to a reduction in self-esteem (Hops n. 2007).

So for many people, work is a source of stress is the cause of ailments-physical and mental health. At the same time, professional stress is a phenomenon the inevitable, what more is increasing as a result of structural change and economic. One of the serious consequences of experiencing the stress of work, especially long-term, chronic becomes a Burnout, which is today a serious organizational problem and obstacle in building environmentally friendly jobs.

The phenomenon of the burnout can be defined as a psychological syndrome emotional exhaustion, depersonalization, and reduced sense of personal achievements. These three components are therefore about burnout and distinguish it from other psychological States such as stress, fatigue or feeling of alienation (social alienation). Emotional exhaustion means a sense of the person, that is excessively charged emotionally in the work. It is often described as fatigue, loss of energy, weakness or fatigue. Depersonalisation is revealed in the form of a question, respond to other people, who are the recipients of the services of the person concerned, and so for example. customers or clients. Most frequently manifested in the adoption of neutral posture, soulless or even negative, in contrast to irritability, dislike and low level of interest. In turn, the reduced sense of personal achievements means a decline in the sense of one's own competence and success in professional life. Is associated with the belief of the person about their own nieproduktywności, reduced the possibilities of the implementation of the tasks and the inability to cope with difficult situations at the level of working life.

Maslach and Leiter have six main areas, in the context of which the can be considered a source of Burnout:

- Excessive workload (too many assigned tasks, exhaustion, excessive availability, time pressure)
- The lack of a sense of control (lack of participation in the decisions, ineffective leadership)
- A sense of they underestimated and lack of job satisfaction (too low salaries, lack of discretion)
- Interpersonal problems in the workplace in terms of communication and obtain support
- A sense of injustice/unequal treatment of employees
- The discrepancy between personal values and the values of the organization.

Each of the above-mentioned areas can be individually and subjectively experienced and will require another direction changes. Always, however, reactions of Burnout will have a similar symptomatologię, regardless of the specific area, generating signs of burnout.

The phenomenon of Burnout is characterized by five stages:

1. **Physiological Stage:** This is a phase of the physiological symptoms, IE. pain, malaise, loss of appetite, exhaustion, difficulty in sleeping.
2. **Stages of Social:** This is the stage for which are characteristic: irritability, isolating to uncertainty in human relationships, grievances and grief to others.
3. **Intellectual Stage:** In this phase comes to disorders of cognitive processes, What is revealed difficulties in adopting and communicating information, and delighting in the errors in thinking.
4. **Psychoemotional Stage:** At this stage appear behavioral changes, i.e.. the abuse of alcohol, tobacco, drugs, drug, disregard of its obligations, decrease in liability and risk.

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5. **Stage of the Spiritual:** This phase is associated with loss of faith in the fundamental principles and values, reveals the inner emptiness and lack of interest in other people.

It should be noted that the transition from one stage to another is unstable and often takes place outside of individual's wareness. Always, however, the person affected by Burnout Syndrome experience the exhaustion of physical, emotional, the intellectual and spiritual. Importantly, these problems occur both at working life and leisure time. Therefore, the influence on behavior the unit not only in the workplace, but also have their transfer to family and social environment. Burnout is a complex process, which builds up slowly. Does not appear Suddenly and unexpectedly, but is distributed in time and is usually measured in years. The state of Burnout is the result of prolonged and repeated stress load. Most frequently as a result of years of very intense work, usually associated with intensive operation contacts unfortunately. As a consequence of human functioning in conditions of prolonged stress becomes a factor triggering processes of exasperation, listlessness, discouragement and exhaustion. This collection of symptoms over the months or years to effect what is burnout.

Burnout syndrome is the result of chronic mental exhaustion and sense of the lack of meaning in the action taken. An important factor in the level of Burnout are both stress factors, working conditions, and individual properties of an entity. It is observed, after all, a person, which, despite the unpredictable workloads are still just as involved, charismatic and well know methods for dealing with stressogenic situations. However and unfortunately, most of the public responds to the workload (in each dimension) think ourselves showing: fatigue on many levels of life. Full involvement in work, close contact and the desire to be interpersonal being a professional in their professional activities make you see symptoms of burn-out. Affected people realize a decrease in strength, the sense of the reduction or lack of competence, low self-efficacy and belief about the lack of ability to control events in your life both professional and private. Among the features people particularly susceptible to Burnout instance is given by:

- A strong commitment to work
- Big expectations for their own people
- Denying your own load limits
- Offset by the wayside to your needs and interests
- Willing to accept new responsibilities and tasks
- The imbalance between workload and life satisfaction.

According to the international classification of diseases and related health problems ICD-10 Burn-out belongs to the category of problems related to the difficulties in life. Thus, the burnout is related to vulnerability to drift unit loads psychological, and it can be assumed that it is personal experience stress in the social context of work. According to the C. Maslach emotional exhaustion is this component Burnout vocational training, which is most closely associated with stress, which confirms the relevance of the Locate the phenomenon of burn-in stress (personal immunity to stress). At the same time, the author stresses that personality variables and individual differences are less important in the emergence of a burn-out from the social factors. In this way, C. Maslach assigns a special role factors-and as a key source of Burnout indicates the functioning of the organization.

In-depth analysis of the phenomenon of burnout and the results of numerous studies require sacrifice. Special attention needs sytuacyjnemu in startup process of burnout. According to the C. Maslach and Leiter P.M. causes Burnout can be traced in six areas: excessive workloads, lack of a sense of control,

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insufficient reward, the collapse of the community, the lack of fair treatment and conflict of values. Organizational irregularities in these areas contribute to a work overload, a sense of being undervalued, the loss of the joy of work and the breakdown of relationships. Consequently, the talented, committed and full of good intentions, employees begin to experience difficulties in the relationship with the work (Maslach C. 2001). Chronic burnout seems to be an unavoidable consequence of the lack of response organizational environment for people. Employees working in the state of long-term, permanent stress begin to experience a lack of harmony between your person and the organization. A sense of lack of fit, in effect, provides a starting point for an instance of the burnout. You can therefore be made by Maslach, that causes Burnout should be increasingly sought in the work environment than in the properties of the people.

Nurses

This burnout risk group includes: doctors, nurses, social workers, teachers, police officers, emergency service workers. Among them, a nurse profession holds a special place. Many authors claim that in this profession there is many elements relevant to the development team burnout. These include: personality traits, which are the most desirable image of the role of the professional nurse, beliefs and values that govern the choice of profession, work tremendously demanding emotionally and the structure and organization of work.

Therefore, the occupational group of nurses from the beginning research on burning was the focus of investigators. Studies have helped define this phenomenon, have provided knowledge about its structure and dynamics, there are many theoretical models, which in turn have pointed out how can you prevent the formation and the development of burnout. Burnout can be a huge obstacle in working life and personal people that perform the profession of nurse. Therefore, no investment in prevention of occupational burnout among nurses may not be misconceived. The more that people working in occupations exposed to burn can specify, at least in general, the phenomenon of burnout, it is their awareness of the causes of and capabilities to counter burning is already greatly reduced and falsified. When Freudenberger described for the first time, Burnout, described it as a drop in energy levels that occurs in the employee due to overload other problems. This situation may take place when work is based on the relationships, interpersonal skills, requiring emotional. The author pointed out that the drop in energy results in impaired mental and physical man, which, in turn, negatively affect his professional life and private. For Aronson Burnout is slowly following cessation.

A man in this state has a sense of emotional exhaustion, mental and physical, feels helpless, cannot see in front of you, the work no longer, and integrated tsearch loses also the joy of living. Maslach, a forerunner of research on burning, and the author of basic publications on this topic, she attributed this phenomenon to people carrying out social events in which work with people is on caring relationships. Research carried out among representatives of these professions have resulted in the development by Maslach and Jackson three-material model of burnout, according to which it is defined as a "psychological exhaustion syndrome emotional, depersonalization, and reduced sense of personal achievements, which can occur among people, working with other people in a certain way ". Emotional exhaustion applies to the sense of the person concerned, that the emotional load, which experiencing, beyond its capabilities, that no longer has sufficient resources of emotions, in order to meet the expectations of other people and act as the existing roles. Depersonalisation specifies the ratio of the unit to the other, expressing the excessive isolation, relevant, and even indifferent response to clients or recipients of services. Reduced

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sense of personal achievements applies against a unit to itself, the deterioration of her sense of competence and efficiency at work.

Nursing belongs to a group of professions of trust society, whose role and social roles are infiltrating, and their representatives are expected to professionalism and conduct by higher ethical-moral standards than those which generally apply to the rest of society. People deciding to practise the profession expect will draw from work satisfaction and satisfaction, that giving of yourself to others will be a source of energy for their own life drive. Work in this profession is associated with experiencing stress on many levels, which, in the absence of effective ways of coping, can lead to a sense of discouragement, load and loss of professional satisfaction. Daily contact with the disease, suffering and death forces the nurse to frequent confrontation with the nieodwołalnością loss of life and health. The provision of nursing care is based on establishing and maintaining a close relationship with a patient symptoms and his loved ones, cooperation with other members of the team of therapeutic and other health professionals and non-medical. The entire surrounding nurse or nurse the world professional also consists of people. Each of them have their psychosocial considerations, set out the views and habits, and each of them is the daily briefs-, which often have their reflection in contact with another human being. This specific type of stress generated by the working relationship with another human being, it makes the profession of nurse one of the most exposed to burnout. Although the commitment, high sensitivity and a sense of responsibility for others, as well as resourcefulness and reliability are the characteristics of a very desirable, because it allow you to be a good nurse, is very conducive to emotional overload. The susceptibility to burn predisposes also multi-purpose nature of the work and its complex structure and organization. Occupational requirements in relation to the nurses continually grow to meet them, it is necessary to increase the level of knowledge and professional qualifications and social skills. The nominated social can be for nursing staff a heavy load. The society believes that nurses profession is a very responsible job and often expresses itself in dealing with staff. It is not always done in a glorious and often a nurse as a direct contact with the patient experiencing unpleasant situation, and claim-in its meaning of degrading its dignity and giving seed of guilt and discomfort.

In the course of being carried out repeatedly for research on the burnout phenomenon on nurses, there were burdensome and negatively perceived characteristics of the profession, which are grouped into specific categories.

Requirements related to the specificity of the profession (they can be analysed before the decision on the selection of the profession because they are predictable, but impossible to eliminate), irregular lifestyle caused by work on the shifts, particularly at night. The lack of regularity in the functioning of the body, collapsing circadian rhythm with the need to sleep during periods for physiological sleep is seen by the nurses as a very big disadvantage. After decades of mixing on the same night the body goes (many people) in the phase of the rebellion with often severe psychosomatic symptoms. Often, women bringing up young children complain of terrible fatigue when after a few months or even weeks of his notorious Act by your child at night are finished and chronically tired. The same problem applies to people from the circadian rhythm in case of frequent travel, especially with the change of time. Adjusting and reverting to hemostasis is not simple and requires always the time. We are at the stage of evolution of the accustomed to regularity you dictate by the Sun, the light and the pineal gland. It allows us to organize our existence in a certain framework and allows the cyclical reset. Unfortunately, even the regular participation in the disturbed, but reversed rhythm of life does not cause organic habit. This includes, inter alia, the duty of health care professionals. Because continuous exposure to currency fluctuations in this topic might be for those inconvenient or even harmful.

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The possibility of being infected through close physical contact with the sick, contact with secretions, feces and dirt-is another aspect that was extracted as a factor stimulating a sense of inconvenience. Uncertainty concerning the contact with another human being, limited confidence as to his sincerity, integrity in a situation when the US obligation to provide him with the necessary assistance can be applied. Continuous vigilance procedures and rapid assessment of the situation in order to obtain the maximum safety for health and life not only the patient, but also his, is always at the expense of emotional. Especially in the case of contact with the patient difficult, aggressive, bet live as Newcastle try. Always, after all, there are somewhere in the US care for coming and for their safety. Sick, or the transfer of disease to family members is something undesirable, it's obvious. The element of risk is also seen very unfavorably inclined not only incidentally by the nurses.

The cumbersome lists also the elements of physical work accompanying the implementation of treatment steps and nurturing. To perform the difficult and complicated medical procedures with the patient is picked up by a nurse as a big minus in the performance of professional activities. Despite the technical facilities and the specific rules and procedures many times reality put nursing staff before the ruthless reality. Heavy patients, helping with daily activities or monotone each step does not allow you to find here comfortable conditions of work. Nurse, by participating in the many hours of interdisciplinary operations with a huge amount of equipment wysokospecjalistycznego, must force your body to long hours of inconvenient and niefizjologicznych body position. Preparation of equipment, tools and material completed in weighing several kilograms's also is entered in the roles of nurses working in operating room. Many times it has been shown that physical exhaustion factor or systemic diseases (diseases of the spine, heart disease) are link inflammation to begin a process of frustration ending multi-clip tray of the burnout syndrome. Symptom of disability, infirmity of his own body in the case of nursing personnel is reflected in the thinking about reduced fitness in your profession. This is a very sad, but but very real picture.

To the mental stress include (reasonably foreseeable, but their effort makes itself felt only in the course of work) a huge responsibility with which involves medication and treatment and the awareness that the mistake may be worsening of the patient's health or even death. Aggravating also need to maintain vigilance and control to frequent contact with pain, suffering, disability and death. Experience with human suffering, including suffering (sufferers often associate in nurses who accompanied in the healing process) is an amazing emotional baggage for this occupational group. The emotional considerations, which should be equipped with a nurse, although so very desirable, are often shot in the knee. Unconditional empathy can improve, refine the process of treatment, thanks to the wczuciu the role of the patient. Allows you to visualize your needs. However, the excess emotional border integration with the patient can be an emotional suicide for medical staff. Especially if the final effect of the treatment process, very different from the initial assumptions and perceptions. There are known cases when the death or disability of a patient, despite all efforts, wyryły in so destructive in the personality of the employee, that caused the collapse of his own professional values, led to rebellion and abandon the profession. An important element contributing to the determination of this criterion are also normal, everyday interpersonal relations. It is important who we work with, we exchange views and who listens to us, especially if we are in the process of treating another human being. The most difficult are the relationships in times of high tension associated with the performance obligations. Often, the dynamics of the treatment process-which include unplanned phrases in the healing process of the patient as a cardiac arrest patient, massive bleeding during the operation or totally unexpected reactions of the organism – cause no self-control of some co-workers. Surgical nurses adept to the profession, as the

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biggest stress determine deposited operator. The lack of the basic principles of social interaction, lack of manners and aggressive ignorance represent a major challenge to maintain emotional balance and often and activities of nurses. To pass on mutual professional liability or official blame incompetence (often not scratch) only for the release of your own emotions for example. the doctor is not at all uncommon. Although that offended by the nurse is aware of your own values and refuted such accusations, however, it is always associated with huge interpersonal discomfort and at rozchwianiem. Difficult subject is also alienation and lack of acceptance in the environment. Is a very serious matter, and many employee, not only in health care, forced to change career plans.

The lack of conditions for the treatment of (elements that hinder or prevent the process of treatment and nursing care, and nurses have no effect on their occurrence): instrumental deficiencies (e.g., lack of medicines, bandages, disposable equipment, medical equipment), some general (for example, for an insufficient nursing staff in relation to the number of patients, architectural barriers, bad liked) and system deficiencies (e.g. obsolete provisions, storage meltdowns, organisation of medical care). To the wider comfort nursing also contributes in no small degree of technical facilities. For educated and experienced nurses lack of comprehensiveness in the treatment of the patient is very disruptive and clearly this is marked in the form of various surveys and forms when examining the problem of burnout or evaluating of the quality of working conditions. Is a very important element of a sense of safety in the workplace. Very depressed for nursing environment fact simultaneous contact with the responsibility of compliance with defined and imposed top medical procedures in the collision with the lack of physical (hardware, lekowym, human resources) the completion of these formalities. It reminds the situation if we wanted to write a book, we know the spelling rules, we know what will be its title and plot but ... we have no paper or have only a pen and a twist on what to start writing. Sad but true and unfortunately very common. As previously mentioned the nurses most often do not have this effect, and it's even more compounded by frustration in them which is a vector to burnout. The lack of any manoeuvres, impotency and often forcing the overriding quality standards makeshift solutions gives nurses a feeling of flimsiness of their hard work. This peculiar and painful despair, Inc. in their working lives of nurses. Due to the expansion of the scope of the rights of the patient and the number of lawsuits for not done medical procedures-this situation is planned to improve it but it is still an element of stressful work of health protection.

Low wages, that is, whether the remuneration of nurses to professional requirements and individual effort expended by the nurses in its execution, is also unfavorable for nurses disparity in salary compared to other professional groups. Becoming a nurse in the whole world is with very very difficult multi-stage education. In the field of higher education in many countries over the last 30 years a huge transformation and expanded the level of teaching in the training of nursing personnel. In addition to the graduate medical universities is also required continuous training to postgraduate. Also because of the quite understandable breakdown of the specialties in nursing (dictated by the dynamic development of the Departments of Medicine) is required to have the title of specialist in the active field of nursing. It is therefore the obligation of continuing education for nurses and broaden his knowledge. If we add to these values responsibilities per nurse, her kompetencyjność and responsibility, we have before us a highly qualified provider of security services society health needs. So why to continue this profession if they cannot look forward to an appropriate financial gratification for their work? Dissatisfaction with the salary is not a whim or unelegant nudge. It is a response to discomfort. For centuries, it is known that one of the strongest motivators to action is money and ethical consideration for the work. In many countries it is a very controversial topic and although low salaries of nurses are a matter of indisputable unfortunately are field continuing battles with the dignity of this group financial professional. Referring

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to the burnout it is not difficult to understand that this issue is a very important element influencing negative perceptions of their profession through the prism of financial attractiveness. The lack of opportunities for a dignified existence received salary or work in several hospitals to go on holiday are an effective intimidation to perform the profession and factor effectively lowering your own ego. Hence, the simple way to burnout.

Low professional status, which is manifested by lack of real social recognition for easy work of nurses, lack of legal acts governing the position of nurses in the functioning of the health system. Still, the role of nurses in society is unclear, not clearly identified and conflict. There are people who regard nurses for wise and competent person, trustworthy and socially necessary. However, still and too often, this occupational group is considered from the point of view of its servile function. Crushed by centuries of belief may not enjoy the concept of nurses as independent skilled professions that the profession of public confidence and the necessary to the proper functioning of health care at a high level. Nurses are today members of the treatment team, the leading independent responsible processes of patient care. Often, the nurse is a source of knowledge about the patient and often first takes important first steps in the healing process. The enormity of the knowledge and skills required to have a nurse puts them to a high degree in the hierarchy of professions, not just medical. Very unfair is the treatment of these people only as a medical and social assessment this low contributes to very bad emotional sentiment among nursing staff. Nurse pay duties, overwhelmed by the vastness of knowledge and unappreciated for inserted in their work efforts and commitment have the right to be frustrated, has the right not to feel satisfaction from the way they chose. The base to the very conflicting, warring emotions between vocation and pure regret to ... yourself, to your colleagues and also for the patient.

The evil team cooperation to healing, the most important are the problems resulting from the hierarchical structure of the profession, such as: receiving conflicting instructions from supervisors at different levels and dumping responsibility for the effects of the therapy for nurses. The cumbersome lists also difficulty in interpersonal relations with people involved in the same issue, for example. with medical staff, technical, secondary, employees of the administration. This category lists also demote work nurses by people directly working with them, in a situation when the presentation of recognition would be for them an important gratification. In principle, this category is something like the previous problem with low respect for the nursing profession. As previously mentioned, it is difficult to break, change ingrained social position on the status of this group. Any produced no balance of competence or the correctness of the interpersonal relationship on different lines: the superior-nurse, doctor-nurse, the patient-nurse are the consequence of too low a recognition of this profession. This is reflected in the many aspects, not only about personal dignity but also to promote.

Bad cooperation with patients and their families: the difficulties in building correct relationships caused by personality traits and the wrong understanding by them of the role of nurses, the instrumental treatment of nurses, lack of respect, excessive requirements and requests of the sick, the lack of feedback from patients about the satisfaction with the work of nurses, which deprives them of one of the most important gratification in this profession, namely recognition in the eyes of the patient and his family. For real, involved nurse patient is the meaning of her work. Every action and every think that performs on the professional field is dedicated to the patient. The real nail in the coffin in the course of professional work, unimaginable defeat and a very unpleasant experience for nurse is the patient's dissatisfaction and lack of therapeutic effect, even though the wearer effort and dedication. It is often lightly tossed, misplaced. Often, malice caused by frustration of the patient or his family. However, it is always a painful kick that remains in the minds and prompts to the destructive analysis and ask questions: what I did wrong?

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You may need to be different?, And so on. Such events definitely reduce the value of self-assessment of nurses, subject under question the meaning of her dedication and sacrifice.

Illustration of the above categories on the burnout clearly shows that the causes are very complex. Many authors agree that overall, Burnout is the result of chronic stresowego the nature of the interaction that occurs between the person and the situation. Repeatability of certain hostile events, fear them or their consequences are the engine for progressive, most often the slow evolution of burnout syndrome.

Paramedics

Medical emergency is an area, where the source of stress is the second, the stranger and the situation which led to interference with emergency services. Sometimes it is the same patient, and sometimes the people with whom you interact in providing aid. Paramedic is a qualified health care professional who participates in the immediate life-saving interventions or human health. For him the situations or the average, but not devoid of large dose of stress. Is a member of a small team, working with doctors, nurses, emergency response personnel from other ambulances and hospital Emergency Room workers. Is in direct contact with the family of the patient, which can be particularly difficult in a situation of sudden illness or accident of a child when it needs to alleviate the fear and panic of his parents. The rescuer often passes through a thin barrier of privacy of the patient, and even his intimacy. Enters into his apartment, he finds it in moments of greatest weakness, not only physical, but also mental and social. The patient expects from the rescuer fast and professionally, alleviate suffering, his focus and commitment. This situation is stressful for the rescuer, and the same patient for which lifeguard is still a foreign person, often decisive to its fate (Cydulka R.K. 2008).

There are some common factors in the work of the paramedic, who are the primary source of stress. These include a sense of lack of control-as a lifeguard is a variety of factors, which it influences and such that are outside of its control. As a result of the complicated and very elaborate apprenticeships in the course of education and training-is a conscious situation and predict events that may arise in the course of its activities and current circumstances. Is prepared for a rapid response and to prevent unwanted effects. However, despite a solid preparation, you may receive a number of inconveniences and unconventional situations, which may come as a surprise to the rescuer, and at the same time to become a source of stress. The latter situations when rescuer meets with violence on the part of the patient or his family, which especially happens when they are under the influence of alcohol or other drugs (Popa f. 2010) Sometimes also known by paramedic is the body's response to the deployed treatment-positive or negative, sometimes despite the efforts of the terminating in death. Next a stressor is a sense of uncertainty – it may arise from doubts about the rightness of choices, as well as doubt their own abilities. When the rescuer takes professional activities to help the patient his knowledge about the patient is quite limited. Not always to the end of the spectrum is able to obtain information about his health status, lifestyle, recent activities or medicines. Follow specific tailored to the situation of the procedures, however, the choice of the proper procedure may be initially it works, a huge dose of stress. Everyday work in a medical emergency is the need to make tough decisions in a short period of time. When you are not certain your wrong, which may depend on a human life, there is uncertainty as one of the biggest stressors that can lead to burnout syndrome. As in the case of nurses, eternal fiancee fights with uncertainty and stress of taken decisions is a great field to the development of burnout syndrome.

To paramedic are high requirements. The specificity of work in emergency services undoubtedly involves the exposure of their situations dangerous to life. They are related to the high voltage przeplat-

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anym long periods of relative calm, or routine. Negative interpersonal relationships, the excess duties are sources of stress in the emergency services and the nature of traumatic events with which the rescuers come together every day to increase work-related tensions. The threat of physical harm to health, participation in situations requiring rapid and difficult medical decisions, frequent confrontation with life threatening and the sheer scale of the death and a sense of helplessness during the rescue process, causes massive emotional tension and mental exhaustion. Where the magnitude of the maximum concentration and emotional involvement with the use of manual, physical skills wieńczony is a poor result or the death of a patient before a lifeguard stands tall internal skill understanding and come to terms with it.

It is understandable, therefore, that this work requires special predisposition and high resistance. In the relationship with the patient lifespan is based on its competence and trust, which must get in the eyes of the victim in a very short period of time. Typically, the contact with the patient is short-lived, and the opinion that creates the situations is persistent. Therefore, it is essential to have a good psychological paramedic preparation for some undesirable patient relationship did not become a source of emotional discomfort in a lifeguard.

In particularly difficult situations, paramedic must be prepared to make a decision not or the cessation of rescue intervention. This applies to patients able to extremely severe, Terminal, or if the action to restore vital functions exceeds the time specified procedurally. Decisions "do not resuscitate" are also part of ethics and moral in the relationship with the patient and his family. These moments of rescuers describe as exceptionally difficult and dangerous to your psyche. Tangible contact with death and accompanied by her circumstances (despair of loved ones) is always a huge experience and long stays in memory. Many rescue workers shall be loose talks that several relatives were abandoning the profession because of the trauma of a failed rescue action.

Stress also has an impact on the take by paramedic yet difficult decisions in emergency mass, epidemics or disasters. Sense of responsibility for a lot of people in conjunction with stress-can run be paralysing for a person with low adaptive capacity. As a rule, adrenaline makes the increase in activity and physical mobilization. However, the repeated experience of such situations leads to the gradual burnout, indifference and fatigue. A symptom is also addiction to adrenaline and desire to participate in such events is made only for a specific boost having no connection with the empathy and the desire to help. However, these are isolated cases.

Another source of stress may be the feeling of failure to meet expectations **-** every man from the people, which to some extent deliberately helps counts on gratitude or though a good word, which is the simple word "thank you". Similar expectations, often unconscious, has a paramedic in relation to the people that care, helps in difficult circumstances, sometimes even saves lives. However, at the time of the threat to his health or life the patient focused on yourself and do not mean that at this point, to show gratitude to someone. All of this can cause the rescuer feeling that more gives you from each other than an instead. An important and always found a stressor is paramedic work stress of shift work. Problem discussed in the case of group discussion in this nursing profession have similar consequences. It results mainly from the natural circadian cycle disorders, or work during the day and sleep at night. However, it is a part of their job description, because the health service providers must be constantly available, and the quality of their action must be the same at any time of the day. Shift work entails adverse effects for the body, such as sleep disorders, chronic fatigue, which leads to a deflection and dysfunction in family life and society. It contributes to the severity of the negative feelings, the deterioration of the health and physical and mental. It lowers the sense of satisfaction, causes increased tension, the deterioration of

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self-esteem and decrease efficiency. For employers, this means a decrease in performance and safety and increased sickness absence.

Too long exposure to stress at work can have irreversible health effects, directly affects the reduction of efficiency, lack of compassion for the victims and the existence of negative feelings to yourself such as lowering self-esteem or self-worth. All of these factors can result in reduced ability to overcome stress and consequently move away from the profession.

In the activities of the paramedics there is also the problem of injuries and exposure to infection to pathogenic organic material. Lifting heavy patients and transporting them to the vehicle contributes to later problems with their bones and muscles injuries. The scale of paramedic workers problems is huge and often disqualifies a person to practise this profession.

The profession of paramedic is a job in which exposure to stress is high and where there is a risk of the burnout syndrome. In an Israeli study of a group of paramedics, the burnout occurred in 35% of the polled individuals(Nirel N. 2008). A similar result can be observed in the study, in which 35% of respondents noticed to feel tired at home exhausted all day, what is considered to be a symptom of the burnout. In addition, most of the surveyed people considered their work to be too stressful, and noted the presence of the selected symptoms of the burnout.

Most incriminating factor at work in the light of the results obtained is the remuneration system. However, the most common sign of the burnout was a signifficant tiredness after work. Most of tested individuals have confirmed the use of some constructive ways to deal with stress, but also the unconstructive ones, such as the use of stimulants (including caffeine and nicotine), where consumption increased in difficult situations. Although the vast majority of paramedics have recognized his work as valuable and would have chosen a job in this profession again. There was a moderate and high level of job satisfaction among the responders, what is similar to the results of the research done among American doctors of emergency medicine specialties, where, despite the high level of the burnout, 65% of physicians found their work to be satisfying. Based on the research it can be concluded that among working in Krakow and the surrounding area paramedics there is a dangerously many symptoms of the burnout. This shows the employers the need for creation and implementation some activities to reduce stress levels among employees and to prevent the occurrence of the burnout. Early action, such as a minimalization of the excessive stress or reduction of early symptoms of the burn-out, would prevent the progress of a full-blown intrathecal burnout syndrome (Dudek B. 2004). It is very important that the effects of stress and burnout are experienced not only by employees, but also by the paramedics' employers, who have got among their staff members many worse burnout cases than some of the patients, who consequently receive lower quality care. Nevertheles, there are many effective interventions helping to build a resistance to stress, lower the tension during especially difficult situations (death of the patient, the mass event, etc.), such as providing psychological support and training, relaxation techniques, promoting physical activity and maintenance of appropriate rest periods between their work shifts.

One of the popular methods implemented by employers should be the hiring of psychologist, who helps the paramedics in difficult situations. Particularly important aspect of this form of support is working with rescuers immediately after a particularly traumatic experiences, so called debriefing. The importance of this method was asknowledged by an international practice, since the lack of a suitable psychological action after such an event can lead to post-traumatic stress disorder and serious risk of the rapid burnout (Regel S. 2007). In addition, some employers promote active leisure time as a form of coping with stress and finanse employees tickets to the gym, swimming pool, etc., which is an important element in supporting psychological interventions. So far, however, there haven't done any research

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studies to analyze the effects of these interventions on the level of work-related burningout among paramedics (at least in Poland).

The analysis of these two occupational groups provides a good illustration of the causality of the onset of the burnout symptoms. In recent years the scale of the problem is so large and growing that it has become the subject of verification and observation in each group. Modern psychology very seriously treats this phenomenon and continues working on developing some ways of minimizing its prevalence.

Therefore, the measures taken to prevent burn-out are associated directly with the antistress activities. Primary prevention concerns the work environment. It should consist of the assessment of the psychological risk and elimination or modification of those risk factors that put stress upon employees in order to minimize their amount and eventually to avoid the occurance of the tension. Secondary prevention relates to people. Its mission is to teach the employee how they can effectively deal with the existing stressful situations. Secondary prevention relates to an individual, not to the work environment. Tertiary prevention also applies to a person, but it is to treat the health consequences experienced by the stressed out employee.

According to H. Sęk, the burnout counteracting factors are: a sense of cognitive control, which comes from some positive self-esteem experiences and willingness to make certain personal changes; general acceptance of the own job effectiveness as a positive feeling of resoursefulness. Therefore, the measures to prevent the burnout symptoms development should include the improvement of employee's self-esteem, mainly by increasing his sense of professional competence; strengthening the initial challenge assessment, which is assessing the employee's situation as a challenge. According to H.Sęk, the prevention of burnout should find both the positive and negative strategies. Positive strategies aim at strengthening environmental resources. With regard to the nursing profession, positive approach would be equipping medical field professionalists and students of nursing with the general skills to deal with their stress. The social skills improvement and the proper use of the commitment decks and empathy are as important as professional preparation. It is also crucial to develop the skills to use the positive life experiences and evolution of realistic professional beliefs. The negative strategies are adjusted to minimize risk factors. They consist of reducing and eliminating job nuisance, especially at the macro-social level, for example, by changing the salaries, strengthening the social status of the profession, reducing financial and organisational deficits. The intensity and duration of the stress impact stress can be also decreased by some individual's activities, for example by an appropriate rest, relaxation, maintaining work-life balance. The negative strategy should also modify favorable burnout attitudes and personality traits and the completion of the actual shortage of professional competence. Most of the authors suggests that preventive efforts and countermeasures to Burnout took place at several levels: individual, institutional and institutional indywidualno.

Action at the individual level are based on the use of personal resources of the unit to prevent the negative effects of stress. Most commonly used strategies for samopoznaniu and strategies on reducing the effects of stress.

The first consists of employee learning techniques of self-observation, self metric using professional measuring tools to detect signs of burnout, stress control by passive and active knowledge on this topic. To strategies to reduce the effects of stress include: promoting a healthy lifestyle (regular physical activity, proper nutrition, a sufficient number of hours of sleep, to comply with naprzemienności of work and rest, smoking tobacco), the use of different relaxation techniques (in order to remove unwanted, physiological stress response), cognitive behavioral techniques notes the erroneous and harmful beliefs about work to be done. Action at the level of the relationship – the unit is addressed mainly to increase the resilience

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of the employee's work-related stressors. The task of the intervention in this area is: increased employee knowledge about its own capabilities and limitations, developing effective strategies to handle deal with problems and negative emotions, emotional, instrumental and support in the workplace, the availability of treatment for people at risk of burning and rehabilitation for people "shred". Among the possible to take preventive actions at the level of the employee-company work include: the implementation of educational programmes on stress and burnout, organizing training interpersonal skills, communication and conflict resolution, coping with stress, training, management of own time and the proper use of working time, promoting realistic knowledge of the profession and "professional life". An important element in the prevention of stress and burnout on the level of intervention is to organise in the workplace social support system. Employee support groups would create the appropriate social climate in the environment work, give the possibility of emotional odreagowania issues and get advice from people more experienced. Social support obtained by other team action than formal support groups led by trained leaders also fully protective function before burning. Especially the involvement of associates in creating the atmosphere of camaraderieand kindness, help in the adaptation of the professional staff, common to discuss issues of care, the possibility of exchanging professional experience, showing itself by associates of mutual respect and recognition of [1]. Measures to prevent the development of symptoms of Burnout at the level of the institutions are targeted to increase quality and reduce costs. To this end, it is proposed to carry out regular staff, anonymous testing, allowing to estimate problem of stress and the risk of burnout. Employees in addition to the mandatory health examinations, should be able to carry out a voluntary survey assessing the symptoms of burn-out. Workplace can and should strive to improve the work environment by removing or modifying the stressors, improve mutual communication workers, prevention of buiding up theconflicts at work, the introduction of additional holidays or breaks to enable a more efficient recuperation, to enable employees to participate in internal and external training. Other suggestions relate to the introduction of flexible work plan, adequate to the contribution of the reward system, establish clear and fair principles of management, a clear determination of professional obligations, the inclusion of employees in planning professional development. Reasonable is considered also the creation of the Department of Health Care Services, which would provide a professional guidance for people at risk of burning out and implement prevention programs. As you can see the possibilities of preventing burnout among professional nurses is much. The burnout prevention strategy should already begin at the stage of medical training and last throughout the period of individual's career. It seems that the implementation of a preventive measure system would help to reduce this negative phenomena among nurses.

CONCLUSION

In the face of numerous studies on the working environment, the concept of professional burnout is not new. Around the world, almost every civilized country is home to organizations and institutions that research the working environment. Establishing and accepting that the working environment, the type of activity performed, and any inconveniences that may be a part of the psychophysical state of an employee, actually took years. Several decades of work, primarily psychologists and sociologists, have resulted in the systematization of the notion of professional burnout. While already observing such a phenomenon among the professional community can be regarded as undoubted success in the field of health and safety at work, implementation and public recognition is not always easy and achievable. In many countries, this topic is still very controversial or is not very serious. The phenomenon that disturbs the assumption

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of efficient and effective work in which an employee is merely a source or income vector is by no means undesirable. The concept of professional burnout after lichen in many communities does not work. This is primarily a topic that concerns certain professions. The isolation of particular occupational groups, particularly those exposed to professional burnout, contributed to the analysis of the working conditions of the people who performed the occupations. It has confirmed the socio-psychological assumption that all our human actions leave us unmovable, often very lasting. Once again it was proved this time on the professional canvas that man is an integrated psychophysical whole. Working, carrying out daily duties is a huge part of life for the vast majority of mankind. For many it is the meaning and the driving force of life. A force that can not be rid of or separated from everyday life. But there are some people for whom work is not a passion and a source of satisfaction. The conditions under which they have to perform the imposed duties are so unfriendly and in many respects contradictory to the correct rules of work hygiene, ethics and social cohesion that are rather a substitute for discomfort and perception of work as necessary evil.

Medical staff is a special occupational group. Mental involvement in contact with another person, the individual treatment of each patient through the lens of empathy and compassion in connection with severe technical conditions (such as patient lifting, exposure to injury and infection) is a cocktail that translates into many aspects of a medical worker's life. Not without reason the nurses are included in the results of many studies as workers are exceptionally exploited and are particularly exposed to the windshield and short working life. Also, medical staff life expectancy does not reach long periods of time. The embarrassing "professional burnout" is primarily a worker's performance problem. However, few employers analyze the working conditions that their employees provide. The ignorance of the problem and noticing the needs of subordinates, not perceiving the "human element" in them, leads most often to lowering the quality of their services. In the case of public health, it is a very risky practice to take care of the health and life of the public. Balancing on the border of safety and responsibility. Lack of decisive, wisely developed and above all the stubbornness of the implemented methods of preventing this phenomenon. Although employers' awareness and work culture evolve, however, the prevention of this topic is very low. Young people who start medical studies in the fields of nursing or medical rescue of the "second face" of the profession are not anticipated. Nobody prepares them and does not realize how to handle the tremendous amount of stress they will face in professional life. They are not aware that, as a result of total sacrifice and lack of separation skills from private life, they may "burn" and that the risk of burnout is so great. They learn about it accidentally or when they feel discouraged for work, fall into depression or have a full spectrum of psychosomatic symptoms. Only the enormous involvement of occupational psychologists, even greater popularization of the issue, and top-notch recognition of occupational burnout as a rational threat to health and disease - will gradually increase our self-awareness as employees as contributors to the proper functioning of our communities.

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Chapter 72
Burnout and Obesity in Middle and Upper Management in the Manufacturing Industry of Baja California

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ABSTRACT

Globally, companies are increasingly considering the importance of mental health in workers and their relationship with productivity, which has led to increased research on work stress, which showed that there is a relationship between stress related to work and health disorders, both physical and mental. This chapter addresses the analysis of two of the main consequences that a worker can develop when having work stress: burnout syndrome, measured by the Maslach burnout inventory general survey (MBI-GS) and obesity, through the body mass index (BMI). The study was carried out in 118 people who occupy middle and upper management of the manufacturing industry of Baja California, having as objective to find the relationship that exists between the two variables, using ordinal logistic regression, as well as to characterize the sample using mean difference and hypothesis testing. From this perspective, this chapter can serve as a guide to study the behavior of variables and propose organizational development strategies aimed at reducing and preventing these problems.

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INTRODUCTION

On a global scale, companies are increasingly considering the importance of their workers' mental health and the relationship it bears with productivity. In general, job strain ranks among the ten main work-related health problems, often resulting in serious mental health disorders (World Health Organization, 2016). However, although it starts by having psychological effects, it is occasionally associated with diseases that affect a person's physical health as well.

Job strain occurs when work demands are in disproportion or exceed workers' capacities and resources. On the other hand, it can also occur when a worker's knowledge and skills to meet such demands do not match the expectations of the company's organizational culture. Thus, the severity of job strain will depend on the magnitude of the demands to be met within a certain period of time, the individual's feeling of control over them, and the decision latitude that he/she has in regards to them (American Institute of Stress, 2016).

Worldwide, Mexico ranks first in job strain, with 75% of Mexican workers suffering from stress. It is followed by China, with 73%, and the United States, with 59% (World Health Organization, 2016). Financially speaking, employers and governments are increasingly becoming aware of the high toll stress takes both on individual companies and on the economy in general (Gamero, 2010), namely poor productivity, the increase in the number of lost work days due to absenteeism, constant job switching, an increase in the rate of work accidents, increasing customer complaints, replacement of absent workers, and training of substitute workers, among others (World Health Organization, 2008). This situation can lead to losses of between 0.5 and 3.5% of countries' Gross Domestic Product (GDP). Particularly in Mexico, stress among workers results in losses of between 5,000 and 40,000 million dollars a year (Noticias Tijuana, 2015).

Therefore, research on the subject of job strain has been increasing, the results of which show a clear relationship between work-related stress and both physical and mental health disorders (Kang, Koh & Cha, 2004; Gonzalez & Landero, 2008; Lazarus & Folkman, 1984). The consequences of suffering from this condition include the appearance of exhaustion, burnout (Aranda, Pando & Salazar, 2015), anxiety and depression (Organization Internacional del Trabajo, 2016), alcohol abuse, poor sleep quality, smoking habits and an unhealthy diet that can lead to weight problems (Norma Oficial Mexicana NOM-043-SSA2-2012) to name a few.

This study analyzes two of the main consequences a worker can suffer when undergoing job strain. The first one is the burnout syndrome. This term refers to a prolonged response to job strain, generally understood as a state of extreme tiredness (Ksiazek, Stefaniak, Stadnyk & Ksiazek J., 2011), which develops from prolonged exposure to high levels of psychosocial risk factors (Aranda et al., 2015). The first professions associated with this syndrome shared the characteristic of being more frequent in the service sector (Ksiazek et al., 2011). This was due to the supplier-client interaction, where the individual offering a service had to deal directly with the one receiving it. However, the scope of such professions has widened to include jobs that fit the characteristics of "high demand". An example of this phenomenon is the presence of the burnout syndrome for long periods of time among company managers, who soon began to have health problems such as cardiorespiratory conditions, obesity, gastritis, ulcers, and sleep difficulties (Gil-Monte, 2008).

The burnout syndrome is characterized by having three dimensions (Maslach, 2003): the exhaustion dimension refers to the feeling of lacking enough mental and physical strength to meet the level of demand that the assigned activity poses. In this dimension, employees believe that they have no source of

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energy replenishment, which in turn triggers a greater sensation of weakness. Next is the dimension of cynicism, which surfaces in negative and apathetic attitudes towards both people and work activities. At this level, individuals reduce their performance to a minimum, considering practices such as spending less time in the workplace or lowering the amount of energy used in it. The final dimension is that of inefficiency, which refers to the feeling of lack of productivity at work. As a result of all of the above, individuals develop thoughts of professional failure, negative attitudes towards co-workers, and feelings of emotional exhaustion (Gil-Monte & Peiró, 1999).

Secondly, this research work analyzes obesity, which is defined as the abnormal or excessive accumulation of fat that can be harmful to health. In adults, it is present when there is a body mass index (BMI) equal to or greater than 30 kg / m^2, or equal to or greater than 25 kg/m^2 in adults of short height (NOM-043-SSA2-2012). The World Health Organization (WHO) uses the BMI as an indicator to measure obesity; this indicator is obtained by dividing the weight in kilograms divided by the square of the height measured in meters. Obesity has become a health problem due to the fact that since 1980, it has more than doubled around the world. By 2014, more than 1,900 million adults 18 years of age and older were overweight, the equivalent to 39%, and more than 600 million of them were obese (WHO, 2016). The highest prevalence of overweight and obesity occurred in the Region of the Americas (overweight: 62% in both sexes, and obesity: 26%) and the lowest in the Region of Southeast Asia (overweight: 14% in both sexes, and obesity: 3%) (WHO, 2012).

In Mexico, non-contagious diseases such as overweight and obesity have become one of the main problems affecting not only the health system but also the quality of life of Mexicans of all ages. Results of the National Health and Nutrition Survey (2012) show that the prevalence of overweight and obesity in adults in Mexico was of 71.3% (amounting to 48.6 million people). Specifically, the prevalence of obesity in this group was of 32.4% and that of overweight was of 38.8%. Obesity was higher in females (37.5%) than in males (26.8%), unlike overweight, where there was a prevalence of 42.5% in males, while in females there was a prevalence of 35.9%. In the case of obesity, the highest prevalence occurred in the age group between 40 to 49 years in men and between 50 to 59 years in women. Moreover, the problem was also 28.5% higher in urban locations. Finally, the prevalence of overweight, obesity, and morbid obesity was higher in females, and its cost was approximately 67,000 million pesos in Mexico (Encuesta Nacional de Salud y Nutrición de Medio Camino, 2016).

This study focuses on the manufacturing and export service industry (IMMEX, for its acronym in Spanish) in Mexico as this sector contributes importantly to the strengthening of the Mexican economy by creating benefits such as a decrease in unemployment rates, an increase in technological development, increasing participation in international markets and constant training for workers employed in this type of industry (Consejo Nacional de la Industria Maquiladora y Manufacturera de Exportación, 2016). In the period between January 2015 and May 2016, the IMMEX sector showed a growing trend, with an increase in business of 0.47%. The manufacturing companies registered in the program amounted to a total of 6,134 in the year 2016 (March), 5,024 of which belonged to the manufacturing sector and 1,110 of which, to non-manufacturing companies. Of the 32 states in the country, 11 represent 81.8% of IMMEX businesses, namely Baja California, Nuevo Leon, Chihuahua, Coahuila, Tamaulipas, Jalisco, Sonora, Guanajuato, State of Mexico, Querétaro and Puebla. Regarding the employed personnel, 82.6% is represented by the same previous 11 states, although holding different positions. In the indicator of hours worked in the companies, 7 states represent 85.5%: Durango, Michoacán, Tamaulipas, Chihuahua, Baja California, Guanajuato and Sonora (Instituto Nacional de Estadística y Geografía, 2016).

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The largest number of IMMEX establishments is located in the northern border region of the country, as a result of this, there is a greater number of hours worked and personnel employed, than in the rest of the states. The above, together with the prevalence of obesity in adults 20 years of age or older in this area, (Encuesta Nacional de Salud y Nutrición de Medio Camino, 2016). It makes evident the need to initiate research in the State of Baja California, mainly in the cities of Tijuana and Mexicali.

The aim of the study is to find out the impact of obesity and the burnout syndrome on the IMMEX of Baja California, as well as the existence of positive or negative relationships between them. The staff under study are middle and upper level managers as research results show that the most stress-generating type of work is that where demands and pressures exceed the worker's knowledge and abilities, opportunities to make decisions or exercise control are scarce, and there is little support from others (Leka, Griffiths & Cox, 2004). The profile of middle managers in industries meets the above characteristics. Holding a college degree gives them the opportunity to start at a medium level and not as operators; thus, the lack of operational experience, the pressures of senior managers and the position's high demands can become a source of stress. On the other hand, they are limited and sometimes hindered in their ability to make decisions; a different scenario would help increase their self-esteem and self-value. Furthermore, the role of senior managers entails constantly facing activities aimed at achieving the company's objectives and having to make decisions that can affect the survival or the disappearance of the company. Thus, the responsibility of the upper management is to be effective and to stay that way (Salgado & Mejía, 2008). Yet having to maintain that effectiveness is precisely what triggers the stress process and turns it into an ever increasing threat (Bittel & Ramsey, 1988) both to the individual and the company as the success of companies is based, largely, on its executives' capacity, ability and well-being.

METHODOLOGY

This section outlines the methodology used in this project, which essentially consisted of five stages: description of the sample, validation of the instruments of measurement, statistics of the sector under study, analysis of difference of means and analysis of association of variables. Each stage contains a detailed description of the methods of analysis used and the partial results obtained.

Phase One: Description of the Sample

A cross-sectional, observational study was conducted along the Mexico-United State border area in the state of Baja California, particularly in the cities of Tijuana and Mexicali. Through the use of a non-probabilistic sampling for convenience (Alaminos & Castejón, 2006), 121 surveys were administered to employees in middle and upper management in the manufacturing industry and export services in seven different companies. Out of the total sample, 42 surveys belonged to the city of Tijuana, with 33 men and 9 women; on the other hand, 79 belonged to the city of Mexicali, with 42 men and 37 women. The ages of the participants ranged from 20 to 60 years with an average value of 35.11 years and a standard deviation of 10.2 years. The respondents mentioned a time of seniority in the company ranging from 1 month to 35 years of service. Figures 1 to 4 show the descriptive statistics of the collected data classified into the respective categories.

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Figure 1. Percentages by type of position (Elaborated by the authors)

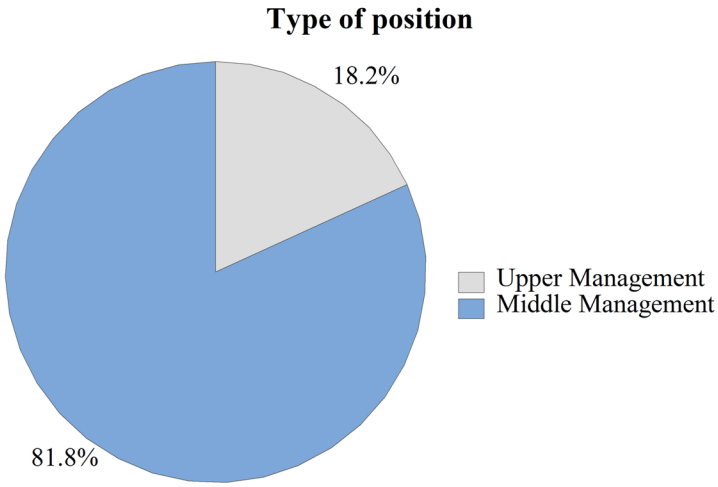

Figure 2. Percentages by type of department (Elaborated by the authors)

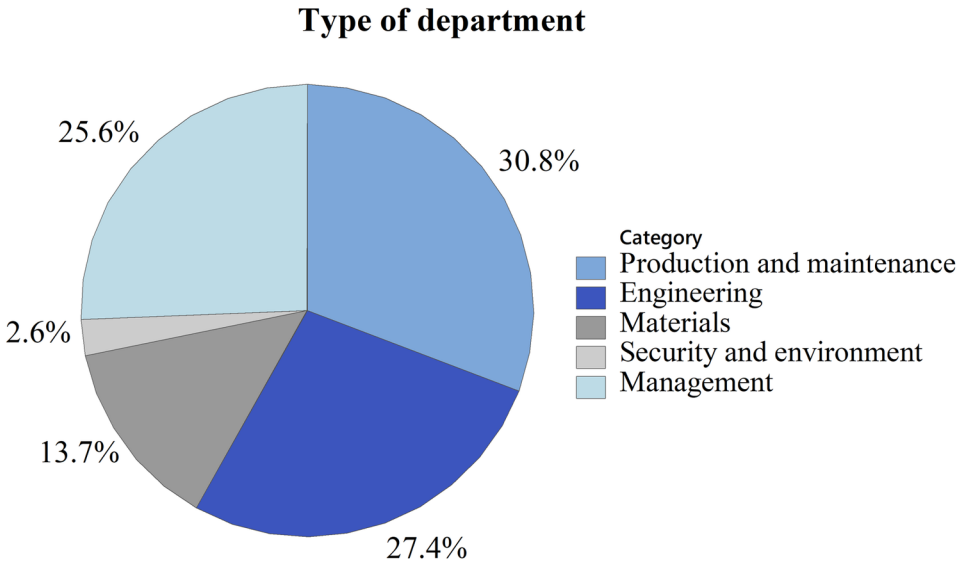

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Figure 3. Percentages by working hours (Elaborated by the authors)

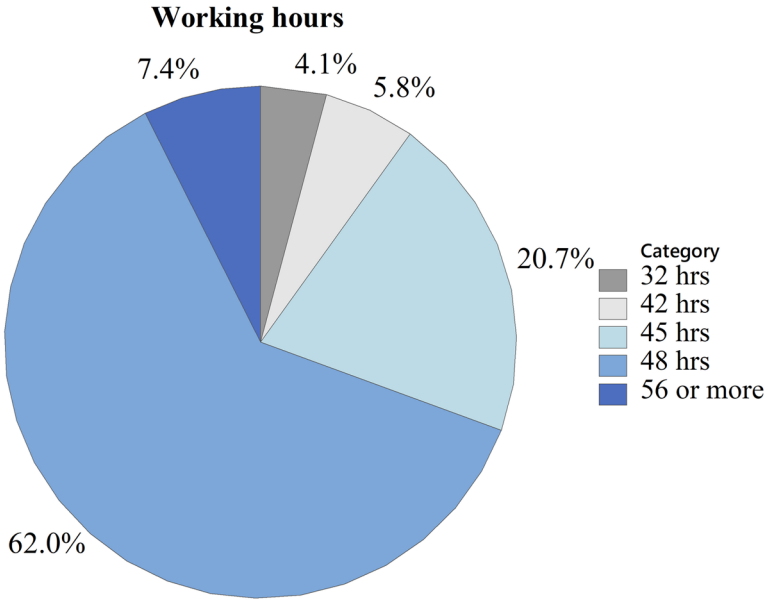
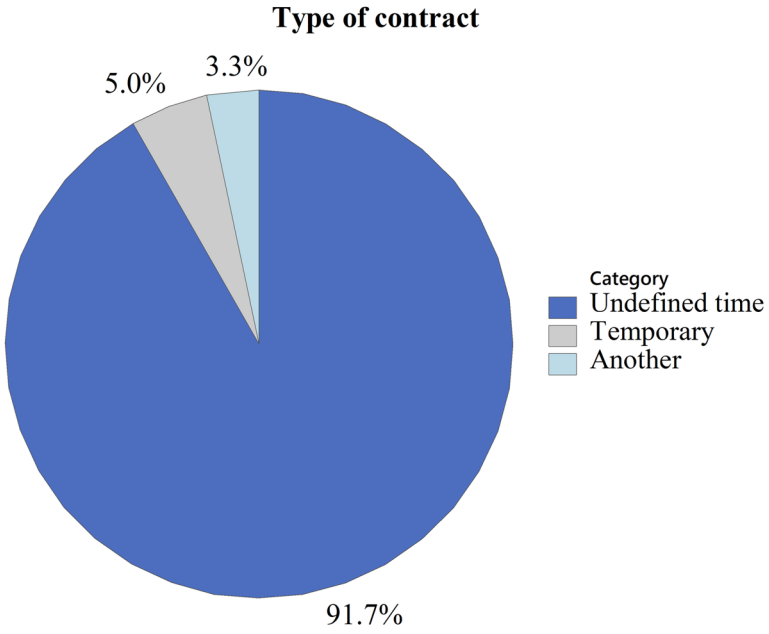


Figure 4. Percentages by type of contract (Elaborated by the authors)



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Phase Two: Validation of Instruments of Measurement

To analyze the two thematic variables, occupational stress and obesity, a self-report questionnaire was provided in physical form to each worker, which included a brief introduction explaining the objectives pursued and emphasizing the information's anonymous character as well as the consent required to collect it. The questionnaire was divided into three sections: the first included an introduction and the employee's general data, accompanied by the signature of consent. The second section consisted of the self-report questionnaire called Maslach Burnout Inventory General Survey (MBI-GS), prepared by Maslach, Jackson and Leiter in 1996. This study used the version translated by Moreno, Rodríguez & Escobar (2001), with highly satisfactory reliability indices, which oscillated between 0.84 to 0.89 for all the three dimensions. This instrument is generic as it was addressed to all personnel regardless of their profession. It consisted of a total of 16 items assessing job strain through three dimensions (emotional wear, with 5 items; cynicism, with 5 items; and professional efficiency, with 6 items). The response scale was Likert type of 7 points. The output variable was a worker characterized in one of the five available levels of work stress: nothing, low, medium, high and extreme. The last section included weight and height measurements for the analysis of the obesity variable. To classify each individual into a type obesity, the ratio of Body Mass Index (BMI) established by the World Health Organization (2006) was used, which estimates the degree of obesity by means of the quotient of its weight in kilograms divided by its height squared and expressed in meters (Welborn, Dhaliwal & Bennett, 2003). The convenience of using this method lay in that it was proposed by a highly recognized world organization and is currently the most accepted criterion used in America and Europe (Guzmán, Del Castillo, & García, 2010) to classify individuals according to their weight. The categories are shown in Table 1 for people over 20 years of age.

Table 1. Classification of BMI (Secretaría de Salud, 2013)

Category	BMI (Kg/m^2)
Underweight	<18.5
Normal weight	18.5 – 24.99
Overweight	>25
Class I Obesity	30 – 34.99
Class II Obesity	35 – 39.99
Class III Obesity	> 40

In order to guarantee the formal validity of the Maslach Burnout Inventory General Survey (MBI-GS), which all questionnaires must show before being used (Cook & Beckman, 2006), an internal consistency analysis was conducted using the Cronbach's α method, with the purpose of finding out the variables of interest in the specific sample and geographical area under study. The results show that the instrument has the necessary validity (Huh, Delorme & Reid, 2006) for data collection in samples of personnel in middle and upper management in the industrial sector of the Baja California Norte border area, featuring an α value of 0.892 for the dimension of emotional exhaustion, 0.816 for professional efficiency, 0.847 for cynicism, and 0.814 for the instrument as a whole since alpha values greater than 0.80 are considered acceptable.

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Each worker's weight was measured with a TAYLOR brand glass digital scale. To ensure the reliability of the scale, a cross-method reproducibility and replicability study was conducted which focused mainly on determining what part of the variation observed in the process was due to the measurement system used (Portuondo & Portuondo, 2010). The data collection procedure took place as follows:

- Three operators were responsible for taking the measurements.
- A sample of ten people was selected, representing the range of expected value with respect to its weight.
- The three operators measured the ten people the same number of times.
- All measurements were taken with the same instrument, in this case the scale.
- To prevent the order of measurement from altering the results, each operator measured each of the ten people in random order within a replica.
- The procedure was repeated until three replicas are obtained.

The results of the study described above, indicate that the variation of the measurements of the sample was 99.9%, so it is concluded that the difference is due to the weight characteristics of each person and not to the error of measurement by the operator. The variation provided by the device, in this case the scale, is 0.1% repeatability, in addition the system is able to distinguish between 44 different categories, so it is possible to affirm that the instrument is valid (Automotive Industry Action Group, 2010) to perform taking measurements in the population studied.

The depuration and analysis of the weight variable was performed. The database, consisting of 121 weight measurements collected, showed 1 atypical piece of data and 3 missing pieces of data, a reason why it was necessary to replace the missing values and treat the atypical data according to statistical guidelines in order to perform future analyses. Considering that the variable was quantitative, the substitution of missing data was done by means of the average method of two adjacent numbers (Nakai, Chen, Nishimura & Miyamoto, 2014), which was considered the most convenient for this case since the data generated gave continuity to the series of values without altering it. Likewise, the missing height data were replaced by the method of the mean of two adjacent data.

Phase Three: Analysis of the Sector Under Study

Based on the statistics obtained regarding the variables of interest and the participating staff, the following graphs were prepared, where information was organized by gender and city.

Workers were classified into 6 levels using the BMI to determine their degree of nutrition. Thirty-two point eight percent (32.8%) of the total sample was found to have a normal weight, with a higher percentage, 44.3%, suffering from overweight, 19% showing class I obesity, 2.5% featuring class II obesity and 0.8% under te category of class III obesity.

Reagrding job strain, 23% of the total sample of workers fell under the category of low level, 23.8% to the medium level, 19.7% to the quite high level, 13.1% to the extreme level and 19.7 did not show signs of suffering from any kind of job strain.

Figure 5 shows nutrition levels in relation to gender. It can be observed obesity class I occured in 20.83% of men and in 15.21% of women; class II obesity, in 1.38% of men and 2.17% of women; and class III obesity, was not present in both men and women. Overweight had a higher percentage in men,

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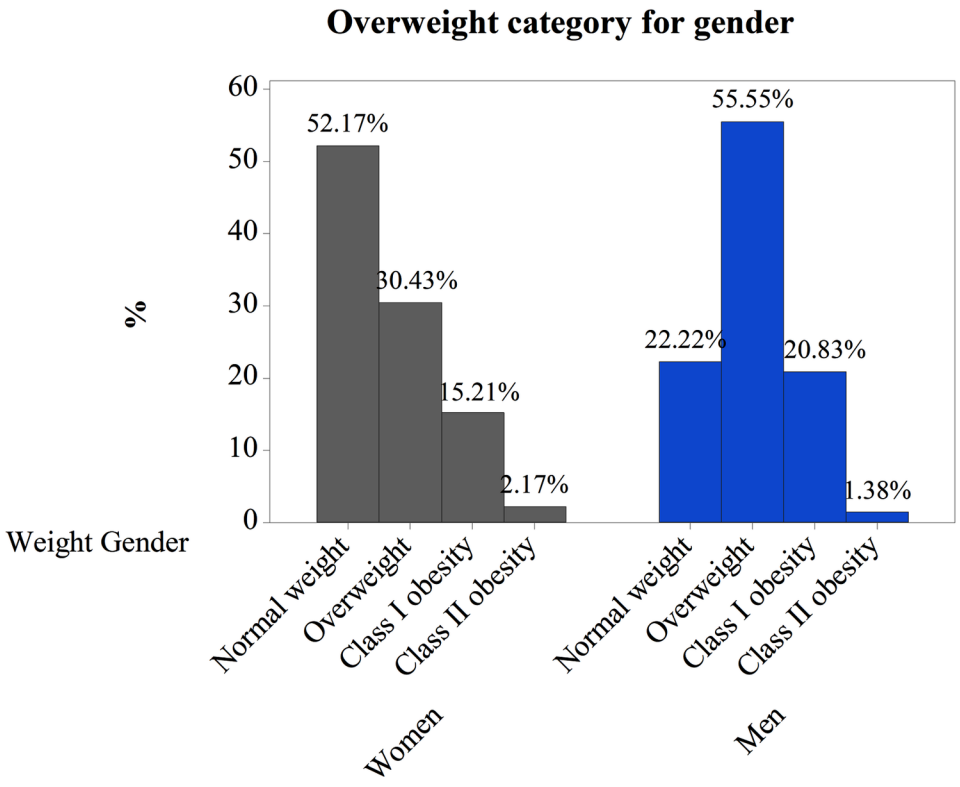
with 55.55%, than in women, with 30.43%. Finally, 22.22% of men are within their normal weight, while 52.17% of women maintain their weight.

Figure 5. Overweight category by gender (Elaborated by the authors)



The classification of the level of nutrition by cities is featured in Figure 6. For Mexicali, the results were as follows: Featuring the highest percentage, overweight was present in 44.15% of the sample, class I obesity in 15.58%, and class II obesity in 2.59%, while 37.66% featured a normal weight. For the city of Tijuana, the following results were obtained: 48.78% were overweight, 24.39% had class I obesity and 26.82% remained at their normal weight.

Regarding the job strain variable, the percentages that feature this condition are shown by gender in Figure 7. In males, 25% of individuals have a little level of job strain, 26.38% maintain a medium level, 16.66% falls under the category of enough, 11.11% have an extreme level and 20.83% do not have this condition. In females, 21.73% have a little level, 19.56% have a medium level, 26.08% have the condition of enough, 15.21% have this condition at an extreme level and 17.39% of women do not suffer from job strain.

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Figure 6. Overweight category by city (Elaborated by the authors)

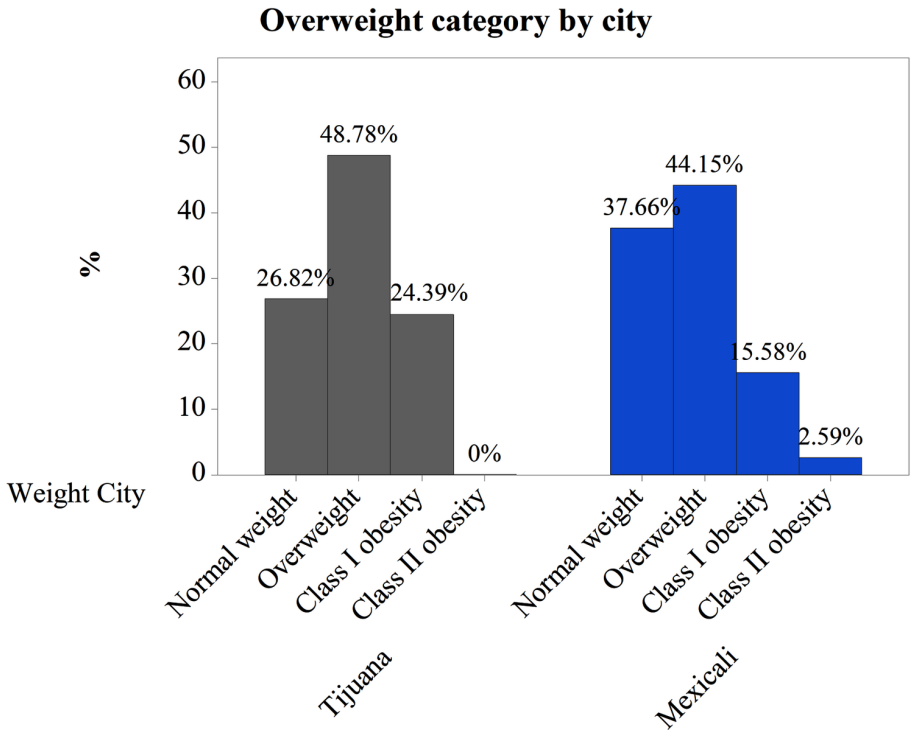
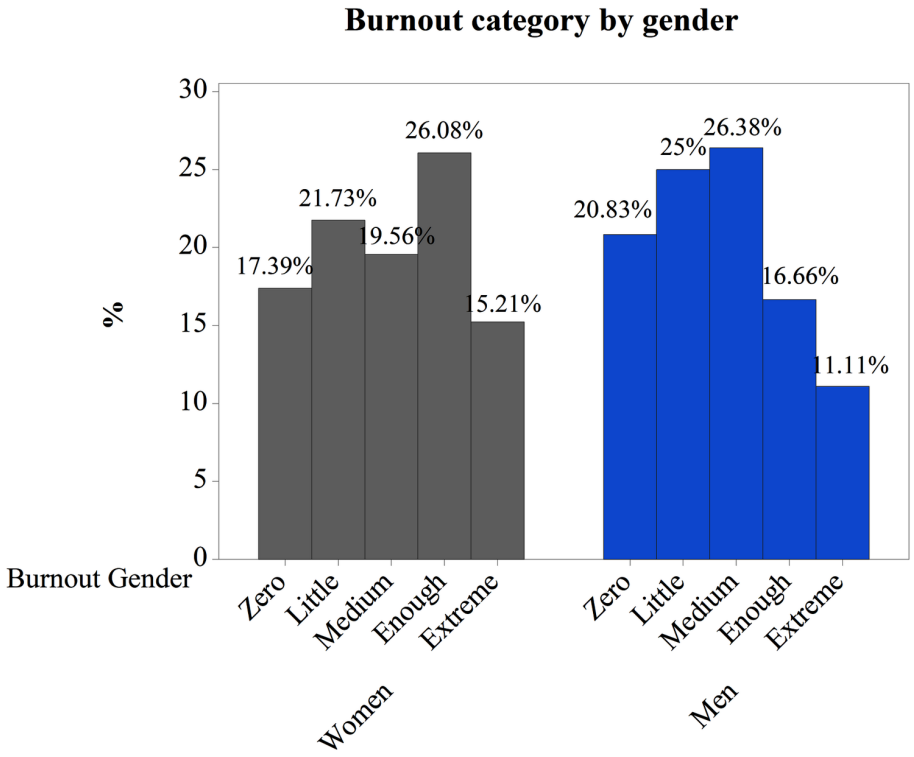


Figure 7. Burnout category by gender (Elaborated by the authors)



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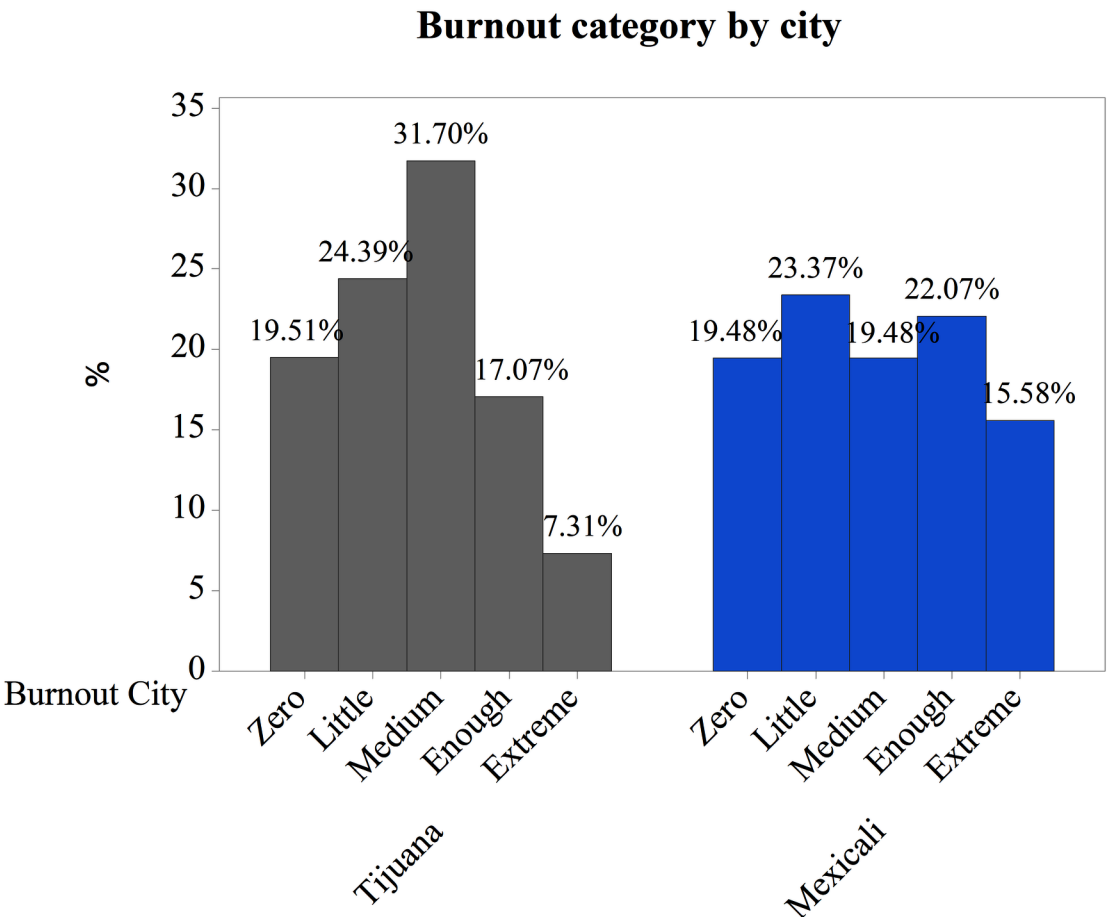
Regarding cities and their level of job strain, the following results are shown in Figure 8: for the city of Tijuana 24.39% of workers have a little level, 31.70% maintain a medium level, 17.07% have the condition of enough, only 7.31% has an extreme level and 19.51% of workers do not have this condition. As for Mexicali, 23.37% presents a little level, 19.48% an medium level, 22.07% a enough level, 15.58% an extreme level, and 19.48% of workers do not have this condition.

Figure 8. Burnout category by city (Elaborated by the authors)



Phase Four: Difference of Means in Relation to Weight

The procedure of difference of means was carried out in order to know whether there were differences between the weight men and women, who occupy middle and upper management positions in the manufacturing industry of the cities of Tijuana and Mexicali. For this analysis, the data had to comply with the assumption of normality (Pearson, 1931; Barlett, 1935; Geary, 1947) and equality of variances, which becomes critical when the sample sizes are noticeably different in each group (Welch, 1938). The analysis was conducted from the 118 pieces of data collected in the two cities.

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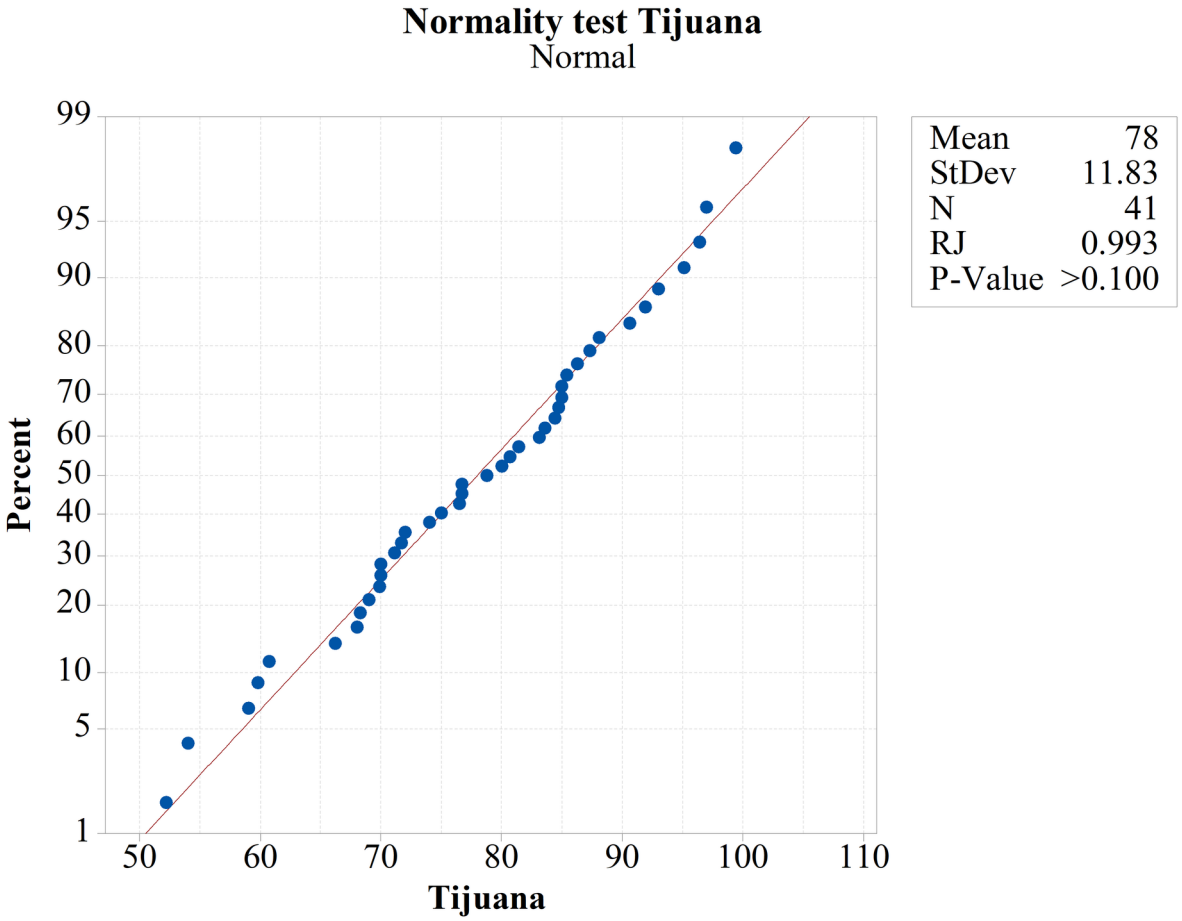
First, the validity of the assumption of normality for weight in the city of Tijuana was estabblished; the test used was that of Ryan Joiner with n = 41; this test is similar to the Shapiro Wilk test, suitable for sample sizes <50. The results showed that the data follows a normal distribution with a p-value of 0.100 (Figure 9).

Figure 9. Normality test for Tijuana data (Elaborated by the authors)



Normality in the weights in the city of Mexicali was determined with the Kolmogorov-Smirnov test considering n = 77. The results showed that it is possible to accept the null hypothesis with a confidence interval of 95% with a p-value of 0.150 shown in Figure 10; confirming the normality of the data.

For the assumption of equality of variances the results show that there is no significant difference between the groups because in the test through the Bonett's method there is a p-value of 0.060, and through the Levene's method the p-value is 0.069; both values are greater than the significance level of 0.05; In addition, the group intervals overlap, with values of 9.914 to 14.828 for the group of people from Tijuana; and from 13.219 to 16.761 for the people in Mexicali, thus confirming the assumption of equality of variances for both groups. The pieces of data used in latter analyses were 118.

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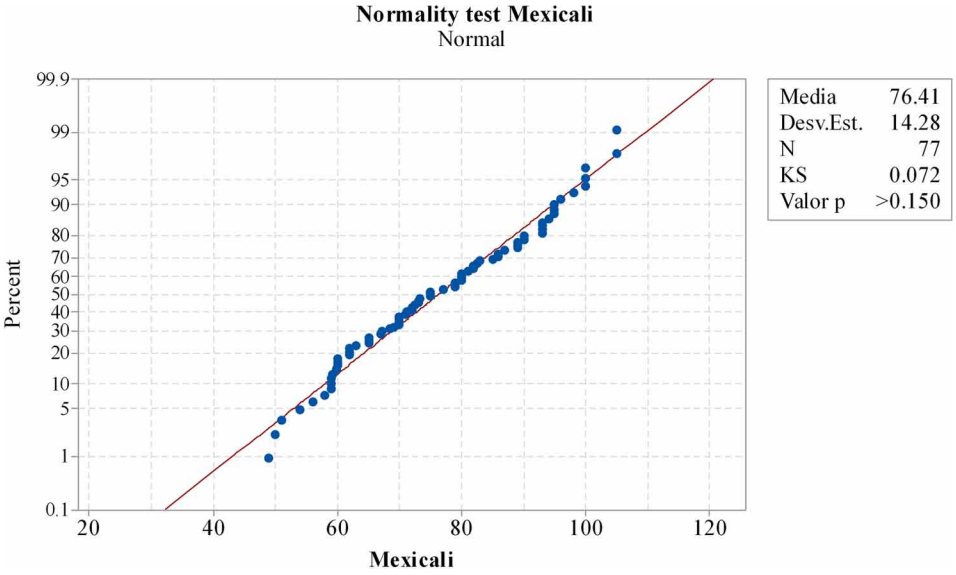
Figure 10. Normality test for Mexicali data (Elaborated by the authors)



A comparison was drawn between the weight of the women, who occupy middle and upper management positionsin the manufacturing industry, of the two selected cities, with a confidence interval of 95%. The results are shown in Table 2 and Figure 11. The p-value in this case was of 0.935, so it is possible to accept the null hypothesis and consider that there are no differences in women's weights due to their working in different cities.

Figure 11. Boxplot of the women´s weight in middle and upper management (Elaborated by the authors)

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Table 2. Difference of means por the weight of women

Weight of Women	N	Mean	StDev	SE Mean
Tijuana	9	67.0	10.2	3.4
Mexicali	35	66.7	10.8	1.8
Difference = μ (Tijuana) – μ (Mexicali)				
Estimate for difference: 0.32				
95% CI for difference: (-8.11, 8.75)				
T-test of difference = 0(vs≠): T-Value = 0.08 P-Value=0.935 DF=12				

In the case of men occupying these positions, the same comparison was made. The results show that the difference in means oscillates between -8.60 and 1.81, with a confidence of 95%, see Table 3 and Figure 12. In this case there is no statistical evidence to reject the null hypothesis, with a p-value of 0.198. It is considered that there is no difference between the weight of men in the city of Mexicali and the weight of men in the city of Tijuana.

Figure 12. Boxplot of the men´s weight in middle and upper management (Elaborated by the authors)

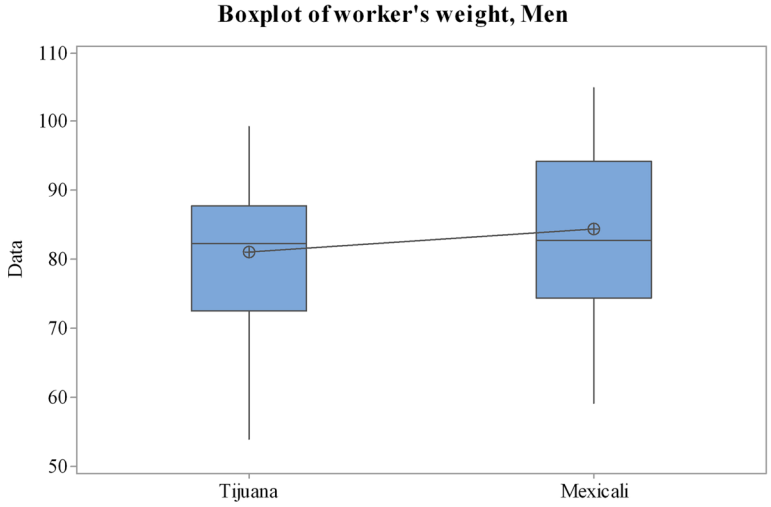

Table 3. Difference of means por the weight of men

Weight of Men	N	Mean	StDev	SE Mean
Tijuana	32	81.1	10.4	1.8
Mexicali	42	84.5	11.6	1.8
Difference = μ (Tijuana) – μ (Mexicali)				
Estimate for difference: -3.39				
95% CI for difference: (-8.60, 1.81)				
T-test of difference = 0(vs≠): T-Value = -1.30 P-Value=0.198 DF=72				

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Phase Five: Analysis of Association of Variables

With the aim of analyzing whether there is a relationship between the weight of the personnel that occupies middle and high level management positions and the level of stress they experience, an ordinal regression analysis was carried out based on the information obtained in 74 men and 44 women. For this, the software minitab 17 was used and the model adjustment was first made considering the information referring to men. The results obtained are shown in Table 4.

Additionally, a p-value = 0.078 was obtained for the test that all the coefficients are equal to zero. With the above information it can be said that the weight of men in this positions is related to the level of stress they experience, for a confidence level a little higher than 90%.

In relation to women, the same adjustment was made and the results obtained are shown in Table 5.

For these data, a p-value = 0.496 was obtained for the test that all the coefficients are equal to zero. With the above information it can be said that in the case of women, the weight is not related to the level of stress they experience.

Table 4. Parameters obtained in the analysis of ordinal regression for men

Predictor	Coeficient	P - Value
Constante (1)	-12.199	0.029
Constante (2)	-11.041	0.047
Constante (3)	-9.913	0.074
Constante (4)	-8.805	0.110
Weight	0.250	0.055
Weight * Weight	-0.001	0.050

Table 5. Parameters obtained in the ordinal regression analysis for women

Predictor	Coeficient	P – Value
Constante (1)	-5.605	0.591
Constante (2)	-4.461	0.669
Constante (3)	-3.734	0.720
Constante (4)	-2.229	0.830
Weight	0.091	0.766
Weight * Weight	-0.000	0.842

SOLUTIONS AND RECOMMENDATIONS

Based on the results, it is possible to conclude that at least in a preliminary way that there is a significant relationship between the weight of the personnel with middle and high level management positions and the level of stress they experience. In the case of women, this relationship was not present; however, the authors consider that this was due to the sample size that is not sufficient to detect the relationship. Therefore, it is proposed to explore this relationship, but using larger sample sizes in both cases, either to discard or confirm this relationship.

CONCLUSION AND FUTURE RESEARCH DIRECTIONS

According to the World Health Organization (2016), Mexico is in the first places, along with China and the United States, with the largest number of people stressed worldwide. The performance of the workforce is impaired due to inadequate workspaces and lack of work benefits that encourage frequent

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medical review, which is why most of the chronic diseases that Mexican society suffers today are triggered by pressure and the work stress that is exposed for years.

Some of the illnesses unleashed by stress that most afflict the health and economy of Mexicans are: depression and anxiety, gastrointestinal diseases, chronic fatigue, obesity and overweight, the latter caused by sedentary lifestyle and poor diet, which together they affect 71.3% of the adult population, which positions Mexico as the first country in the world on this issue, according to the Food and Agriculture Organization of the United Nations (FAO). According to the sample selected for the study presented, the middle and upper management of the manufacturing industry of Baja California, maintain these percentages, having 73.17% of people with this condition, while in Mexicali it is 62.32.

In the sample, obesity was higher in men (22.21%) than in women (17.38%), as well as in overweight, where there was a prevalence of 55.55% in men, while in women there was a prevalence of 30.43%, below what is reported in adults of the Americas region, considered as the highest population in these conditions, which presents 62% of overweight and 26% of obesity in both sexes.

Even though the results show no difference between the weights of those in the middle and upper management of both cities, it is necessary to point out that women who occupy these positions perceive a higher and more extreme level of stress (41.49%) than men (27.77%).

For the above, it is considered of utmost importance to continue with the study to generate a model that explains the relationship that exists between the variables, which will allow the development of strategies to improve the health of employees by reducing work stress and its consequences, what will positively impact the quality of life of people and the productivity of companies.

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Chapter 73
Analysis of Role Stress in the Indian IT Industry

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ABSTRACT

Contemporary industries face new competition requiring employees to work for longer hours under competitive time-bound deadlines. Prolonged exposure to such stressful situations leads to a depletion and exhaustion of resources in the mind and body with dysfunctional effects on job performance and overall organizational effectiveness. The Indian IT industry is a fast-paced service industry that is characterized by such stressful work situations and related outcomes. This chapter analyses the various factors that contribute to organizational stress and the role of demographic factors on role stress among the professionals of the Indian IT industry. A sample of 250 employees has been collected from the Delhi NCR region. Role stress has been measured by using the ORS scale which comprises of 10 dimensions of the role of stress that are measured by 50 items. The results show that there is a considerable amount of work related stress along with a significant impact of demographic factors on the role of stress amongst the IT professionals.

INTRODUCTION

The India Information Technology (IT) Sector is seen in conjunction with the Information Technology enabled Services (ITeS). The sector has a substantial contribution to the national economy as it caters to domestic and foreign markets. The rise of exports makes it account for almost 75% of its total earned revenue. Broadly, the sector is divided into four large segments that comprise of IT services, ITES-BPO and Software; which includes both Research and Development and Engineering.

Apart from various other accolades this sector has also been instrumental in energizing economic growth through its interaction with the higher education sector pertaining to computers and all the Engineering fields.

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As economic times get harder; there arises diminishing security of jobs, because of which people remain in jobs that are consistent; but not fulfilling. The IT sector is seen to be characterized with high Role Stress (Colomo-Palacios et al., 2014b; Karad, 2010). The nature of work pressures in contemporary organizations requires employees to work longer hours, under stressful conditions of workload, performance pressure and competition. The IT industry is seen to be characterized by challenging conditions of organizational Stress 4 6. Stress has highlighted itself in the visibility of a rising trend of employee sickness, premature labour turnover, and premature retirement due to ill health, lost production. In 1936, Prof. Hans Selye, "The father of modern stress", researched on dysfunctional effects of stress on the human body due to overarching demands on it. The empirical research in the field began only after Hans Seyle's first article on stress in 1956 20. Stress can be categorized into positive and negative aspects. Positive stress is also called *eustress* and can be defined as a pleasant or curative stress that helps a person to perform better, given the situational demands. The General Adaptation syndrome considers *eustress* as a part of the initial indication of the alarm in the body, but problem seems to arise when the alarm is ignored and ones resources are completed depleted and result in a burnout 21. Negative stress is reached by the body when the body alarms are ignored and the body heads towards a burnout. Increasing workplace demands along with increasing professional aspirations create a point of dissonance for the employee by making him work against all odds of time and resources. A big challenge for organizations now is to create an environment that equips employees with well suited coping mechanisms and programs in fruitful stress management.

Particularly in the IT organizations; organizational culture is seen to be lacking in terms of assisting the employees on the knowledge about stress and coping for psychological problems. The work process are highly dynamic and time bound, as employees have definite targets to meet, that are incubated in different time zones. The life expectancy of products and programs declines each year, while the demands on employees to provide better solutions increases. Internal IT departments that cannot keep pace with the changes and are not sufficiently adaptable are in a danger of being outsourced. Because of the unique set of environmental pressures in IT functions - continuous re-engineering, outsourcing, more demanding customers, general information overload (Karad, 2010) and hard decisions (Colomo-Palacios et al., 2013).

In the Indian IT industry, the trend towards aspiring youngsters who would work extra hours to acquire material comforts; seems to increase. Researchers have shown that broadly the major causes of workforce attrition in the IT sector are work-related, psychological and emotional. The specific variables are effort- reward imbalance, perceived workload and emotional exhaustion. Research shows that there is a very common practice of software engineers who have less than five years of work experience; to leave work. This is a resultant of issues like a shrinking student base, low attractiveness of the profession in terms of image and status (García-Crespo et al., 2008; Day, 2007). A direct outcome of stress is seen in the high levels of attrition that the industry faces. A big challenge for contemporary organizations is to create an environment that equips employees with well suited coping mechanisms and programs in stress management. Research shows that, high levels of stress can lead to emotional exhaustion, lower organizational commitment, and increased turnover intentions (Cropanzano et al. 2003). More recently, research by Colomo-Palacios et al. (2014) shows that stress also leads to IT career abandonment.

A big challenge that the organizations face is that, stress interventions cannot be used as a blanket strategy for all the employees. Apart from individual differences that exist in the workforce; there are always generic differences that are brought forward by demographic factors. The present study explores in detail, the role of various demographic factors in studying workplace stress among the professionals of the IT industry. There are extremely few researches that explore this aspect in the Indian IT industry.

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The IT sector is also seen to be characterized with high role stress (Karad, 2010). The employees have definite targets that they have to meet, as most of the projects are time bound and incubated in different time zones. Employees need to work through night shifts and deliver the services. Apart from this, the nature of the IT industry makes it subject to phenomenal and increasingly rapid changes. Internal IT departments that cannot keep pace with the changes and are not sufficiently adaptable are in danger of being outsourced. Thus, given the scenario, the employees of the sector need to develop the 1) the ability to learn, 2) the ability to work in teams, 3) oral and written communication, 4) problem solving and reasoning, and 5) a point of reference to health and wellness (Colomo-Palacios, R. et al,2014). More recently, research by Colomo-Palacios et al. (2014) shows that stress also leads to IT career abandonment (Korczynski,2001)

The outcomes of the study will be beneficial for the management professionals in dealing with different strata of employees, when it comes to the issue of workplace stress.

ORGANIZATIONAL STRESS: A REVIEW OF LITERATURE

Lazarus (1993) explained Stress, as a condition or feeling experienced when a person perceives that the, "environmental demands exceed the personal and social resources that the individual is able to mobilize". Hans Selye referred to stress as the, "non-specific response of the body to any demand for change" (Selye, 1997). Research shows that Stress has been studied from various contemporary and historic perspectives. Its impact on work outcomes has been heavily research upon. Researchers have also tried to identify the role of different cultural, demographic and social factors on stress. While on the one hand it has been reported that there are no differences between women and men in relation to workplace stress, it has also been noted that there are differences in both stressors and the severity of stress between the genders.

Spielberger & Reheiser (1994) conducted a study with 1781 working adults, measuring gender differences in occupational stress using the Job Stress Survey (JSS) in American university and corporate settings. It was found that there were no significant differences in the overall stress levels for the two genders, although occupational stress level was highly significant with managerial/professional participants (Spielberger & Reheise, 1994).

Nelson, and Quick (1998) explored the various reasons of work stress in organizations. The researchers have identified four basic factors which are; *Role Factors, Job Stressors, Physical Stressors and Interpersonal* Stressors (Michailids & Elwaki,2001). They explained *Role* based factors causing stress by virtue of an expectation set that is placed on an individual within an organization; especially if these are confusing, ambiguous or conflicting. *Job stressors* are explained as factors related to the basic quality and quantity of work performed as well as the feedback and appraisals that individuals receive regarding their job performance. *Physical Stressors* are explained as stressors that affect the senses, such as light, noise, vibration, smell, temperature, etc. *Interpersonal Stressors* are the factors that deal with one's inability to manage and cope with co workers, friends, family and all associates in general.

Russell & Zinta (2000) investigated the relationship of Organizational Stress and exhaustion to work outcomes such as commitment, turnover intentions, and organizational citizenship behaviors. Based on the Conservation of Resources (COR) model, it was found that stress & emotional exhaustion were negatively related to organizational commitment and supervisory commitment. Emotional exhaustion effected turnover intentions positively. Organizational citizenship behaviors were studied and were found

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to be negatively related to organizational stress & emotional exhaustion. Therefore a stressed employee was more likable to quit his job.

Neelamegam & Asrafi (2001) identified & measured the level of stress of bank employees that was resultant of the changes in the banking sector due to policy changes, globalization and liberalization and increased competition from the entrance of more private (corporate) sector banks. The study established that stress levels were negatively correlated to years of service and qualification. Incongruent roles, insults, long work hours were identified as major factors of work related stress.

Oi-ling Siu (2002) examined the levels of stress in Managerial and Non Managerial employees in organizations in China and Hong Kong. Standard instruments were used to carry out this research. The study showed that occupational stressors play a significant role in determining job satisfaction, mental and physical well-being. It was also seen that organizational commitment and well-being are positively related to each other, emphasizing that committed employees would have less levels of stress and vice versa.

Michailids & Elwkai (2003) studied factors contributing to workplace stress in the fast-food industry. The Occupational Stress Indicator was used for examining these factors with a sample size of 100 respondents working in different fast food restaurants. It was found that factors such as, ones feeling about their job, behaviour, interpretation of events around them and coping differences contributed to stress. There was significant difference in the perception of stress between women and men as well as individuals in managerial and non-managerial positions with regards to their personality, the degree of ambition and work dedication they possess.

Bacchino et al. (2003) Studied the congruence between personal and organizational values (P-OC), perceived psychological contract violations (PCV), and work stress in the context of age, gender, and job tenure. The results of the study showed that employees reporting higher levels of psychological contract violations are more likely to experience organizational stress. Male Employees were reported higher amounts of stress. Beehr et al. (2003) studied the congruence between sources of the stressor and social support. A sample of 117 respondents was chosen. Two social support measures were used; mainly social support from the supervisor and from the co-workers. A social support scale was used for analysis. The results showed that the Congruence between the sources of stressors and of social support appeared to make little difference in determining the moderating effect of social support on the relationship between stressors and strain. It was seen that role ambiguity and workload originating from the supervisor were positively related to stress.

It has been reported that although women and men are exposed to the same stressors, women are also facing unique stressors. This is particularly important according to Hofboll et al. (2003) as several studies have found that the provision of workplace support was more effective in reducing occupational stress in men than in women. It was reported that women in particular are exposed to the following stressors: multiple roles; lack of career progress; and discrimination and stereotyping.

Aziz (2004) examined the levels of organizational *Role Stress* among women in the IT private sector organizations. The ORS Scale was used on a sample of 256 women professionals. Amongst the major stressors, it was seen that, Resource *inadequacy (RIN)* was ranked as the most potential stressor and was followed by Role *Overload (RO)* and *Personal Inadequacy (PI)*. It was seen that there was significant difference in the stress levels of professionals who were not married and married (Rydstedt, L. W.,et al,2004).

Loosemore & Waters (2004) studied the influence of gender on stress levels in the construction industry. The studies significantly found that overall; men experience slightly higher levels of stress than

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women. They added that men get more stressed by risk taking, disciplinary matters, and implications of mistakes, redundancy, and career progression. Women on the other side were more influenced with factors such as, opportunities for personal development, rates of pay, keeping up with new ideas, business travel, and the accumulative effect of minor tasks.

Sharma (2004) examined the role and causes of stress in the lives of doctors working in private and public hospitals. Role overload and conflict were seen to be the major reasons of stress. Torkelson & Muhnonb (2004) studied the relationship between coping and health problems in the context of gender and level in the organization. Data was collected from a sample of 279 women and men (100 managers and 179 non-managers) at a sales department in a Swedish telecom company. The nature of work for both men and women were kept similar. The analysis showed that with the level and gender kept controlled, there was no relation between problem-focused strategies and health. On the other hand, emotion-focused strategy of seeking emotional support was associated with fewer health problems. It was observed that the coping mechanisms of individuals were related to the levels that they held. At senior levels, similar coping strategies were used where as at non managerial levels, conventional coping patterns were used.

Michailidis & Georgiou (2005) examined occupational stress of employees in the banking sector by taking a sample of 60 bank employees working at different levels. The Occupational Stress Indicator (OSI) was used for analysis. The results showed that employees' educational levels affect the degree of stress they experience in various ways. Factors such as educational background, the strength of the employees' family support, and the amount of time available for them to relax was also instrumental in contributing towards workplace stress experienced by individuals.

Härenstam and MOA Research Group (2005) studied the management strategies and working conditions in 72 establishments by classifying these elements by type of operations and company position, in order to learn about the increase in occupational stress and sick leaves. The results showed that management technologies distribute risks between segments of the labour market and different groups of the labour force. The developments were most favorable in high tech and knowledge-based operations and least favourable.

Rydstedt et al. (2004) studied the lay theories of stress .The researchers aimed at studying the lay beliefs concerning work stress and perceived strain. A sample of 2270 was used to build on an earlier study of lay beliefs that were assessed by a scale consisting of 36 items. Factor analysis gave a solution with five factors on perceived causes and four factors of perceived alleviation of work stress. Significant relations was found between lay beliefs of work stress and perceived mental strain as well as job stress. It was also found that individual's subjective beliefs about work stress were a potentially mediating factor between objective working conditions and stress outcomes.

Dasgupta & Kumar (2009) analyzed the sources of *Role Stress* among a sample of female doctors working in Shimla. The study revealed that *Self-Role Distance (SRD), inter-role distance (IRD), Role Stagnation (RS), Role Ambiguity (RA), Role Overload (RO), Role Isolation (RI), Role Expectation Conflict (REC)* and *Role Inadequacy* (RI) are the major sources of role stress. The study also showed that there was no significant difference among the male and female doctors, except on the parameters of inter-*role distance* (IRD) and *role inadequacy (RI).The male* doctors were found to have greater mean scores on these two parameters 110.

Nikolaou & Tsaousis (2009) studied the relationship between emotional intelligence and stress in a sample of professionals in mental health institutions. A total of 212 participants were administered the Emotional Intelligence Questionnaire as well as the Organizational Stress Screening Tool (ASSET), a

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new organizational screening tool, which measures workplace stress. The results of the study showed that Emotional Intelligence was negatively co related to stress and positively related to affective commitment.

Smith (2011) researched on the effect of demographic and diversity statistics on stress and highlighted that here is a need to establish a unified definition of perceived stress as it means different things to different people. A universal understanding and role of individual differences is still unclear through research.

Wirtz et al. (2013) Investigated whether occupational role stress is associated with differential levels of the stress hormone. Findings suggested that occupational role stress in terms of role uncertainty acts as a background stressor that is associated with increased HPA-axis reactivity to acute stress.

Yongkang (2014) explored the relationship among role conflict, role ambiguity, role overload and job stress among the middle-level cadres in the Chinese local government. A sample of 220 employees was selected. The results showed that time pressure was significantly correlated with role conflict and role overload. Along with this, the study also established that job anxiety and job stress were significantly and positively correlated with role ambiguity, role conflict and role overload; role ambiguity had a significant and positive effect on job anxiety and job stress; role conflict and role overload had a significant and positive effect on time stress, job anxiety and job stress.

ORGANIZATIONAL STRESS

As shown in chapter 2, a detailed review of literature was done in order to analyze the various key words in definitions and constructs that have been used to explain Stress.

Steps and Procedures in Factor Identification

Step 1

Table 1 shows the different groups in which key words of similar meaning and application are grouped together

Step 2

After identifying the key variables that explain the various dimensions of *Organizational Stress*, an analysis of the variables is done with the four ***Historical Approaches*** of Workplace Stress

Four Major approaches of stress that highlight the eminent works of researchers such as Canon, Lazarus, Kahn and Levinson have been studied

Historic Approaches of Stress

- **The Homeostatic/Medical Approach:** This approach highlights the work of Walter Cannon who discovered the stress response, initially called the "the emergency response," or "the militaristic response." In this case an external demand spoils the homeostasis of the body, which is more or less a neutral and natural bodily state; ultimately causing stress.
- **The Cognitive Appraisal Approach:** Richard Lazarus contributed to the field of success and highlighted that individual differences play a key role in the inception of stress. Thus individuals

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Table 1. Identification of key words from literature review

Key Words (Research Definitions)	Group
Physical damage as a result of the bodies general over adaptation to the stressor (Selye, 1997)	Physical damage felt by the body
Discrepancies between the way in which individuals view themselves, the ways in which they perceive others as responding to them, and the actually do evaluate them. (Lundgren, 1978)	One's sense of self concept
• Non-specific response of the body to, demand for change, perception (Selye, 1997) • Perceiving stressor as a stressor (Briner et al. 2004) • Responding to an event that could be imaginary or real (Brieir & Elliott, 1988) • Individual's own judgment (Holroyd & Lazarus 1982)	Stress as one's individual perception
• Discrepancy in environment its demands of us • A reaction of a particular individual to a environmental stimulus. (Hinkle 1973). • Individual and environment coexisting in a dynamic relationship.(Folkman, Lazarus, Gruen & De Longis, 1986)	Strain of Environmental demands
• An over or under load of information or matter (Steinberg & Ritzmann 1990) • Demands exceed the personal and social resources (Lazarus 1993)	Work Overload& under load
• Incompatible behaviour, multiple expectations or obligations associated with a single social role (Levi, 1996) • A misbalance between what we actually need versus what we are capable to provide (Levi, 1996)	Non clarity of one's roles
• Individual difference in stress inception such as; personality, self esteem, locus of control, coping style, hardiness, type A, attribution style, demographics, expectations, preferences, commitment, health related factors and abilities (Payne, 1988; Parkes, 1994) • Individual Differences such as locus of control, hardiness, and coping resources (Cox & Ferguson, 1991)	Individual differences and Personality

may not see a stressor in the same capacity as another person. As, individuals differ widely in their appraisal of situations of people, Perception and cognitive appraisal formed major parts of the stress process in an individual.

- **The Person−Environment Fit Approach:** Robert Kahn explained this as a fit between ones expected demands from his role and the skills that he is capable of providing. Thus confusion between the two leads to stress. A good person – environment fit arises when there is a good balance between expectations and demands.
- **The Psychoanalytic Approach:** Harry Levinson took from the Freudian approaches to explain stress in terms of the ideal self and the real self. Where an ideal self is desirable by a person; a real self is a person's direct witness of self personality. Thus a difference between the two leads to stress between individuals.

As identified in the literature; Table 2 shows the groups of the key words that have been highlighted by various researchers. The factor, "Physical distress", finds its congruence with the Homeostatic approach as both talk about the nature of stress that is imbibes in physical distress or strain in the body. Stress tends to grow in the individual as the physical strain grows. The Cognitive Appraisal Approach finds congruence with the factor, "Individual Perception", or the way in which one perceives his role in the organization. The way in which individuals appraise their stressor is also a matter of perception. Role under load is one such factor in which a sense of insecurity and a feeling of under competence start to develop.

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Table 2. Congruence of historic approaches with identified key words of stress

Keyword Identified/Concepts Evolving From the Review of Literature	Congruence With Approaches	Identified Factor
Physical damage as a result of the bodies general over adaptation to the stressors (Selye, 1936)	Homeostatic Approach	Physical Distress
• Discrepancies between the way in which individuals view themselves, the ways in which they perceive others as responding to them, and the actually do evaluate them. (Lundgren, 1978) • Belief in ones capacities (Payne, 1988; Parkes, 1994)	The Psychoanalytic Approach	Self Image
• Non-specific response of the body to, demand for change, perception (Selye, 1936) • Perceiving stressor as a stressor (Briner et al., 2004) • Responding to an event that could be imaginary or real (Brieir & Elliott, 1988) • Individual's own judgment (Holyroyd and Lazarus 1982)	The Cognitive Appraisal Approach	Individual Perception
• A reaction of a particular individual to an environmental stimulus. (Hinkle 1973). • Individual and environment coexisting in a dynamic relationship. (Folkman, Lazarus, Gruen & DeLongis)	Person–Environment Fit Approach	Work Environment
• Under load or overload of matter, energy or information • Demands exceed the personal and social resources (Lazarus 1993)	Individual - Environmental Fit	Work Overload & Work under load
• Incompatible behaviour, multiple expectations or obligations associated with a single social role (Davis, 1995) • A misbalance between what we actually need versus what we are capable to provide (Levi, 1996)	Person–Environment Fit Approach	Role clarity
• Incompatible behaviour, multiple expectations or obligations associated with a single social role(Davis, 1995) • Individual difference in stress inception such as ; personality, self esteem, locus of control, coping style, hardiness, type A, attribution style, demographics, expectations, preferences, commitment, health related factors and abilities (Payne, 1988; Parkes, 1994) • Individual Differences such as locus of control, hardiness, and coping resources.(Cox & Ferguson, 1991)	Person–Environment Fit Approach	Personality

The Person–Environment Fit Approach finds congruence with factor named "Role Overload & Under load, Personality & Work Environment"; which explains concepts of, role conflict, ambiguity and individual differences in perceiving the environment, as the individual is incapable of understanding the exact and reasonable demand from his resources in the organization. The Psychoanalytic Approach finds congruence with the factor, "Self Image"; which explains a person's self image as a major reason as perception of stressor in one's mind as an off shoot of his self concept.

List of Variables Identified for the Study

1. Physical Distress
2. Individual's Perception
3. Role overload
4. Personality
5. role clarity
6. Self Image

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7. Workplace Environment
8. Role Under load

Rationale for Adapting Organizational Resource Stress Scale (ORS): Dr.Udai Pareek

After reviewing the various approaches and concepts of workplace stress, a comprehensive list of variables has been identified.

Step III

Organizational Role Stress Scale

The scale comprises of ten factors, namely; Inter-role distance (IRD), Role expectation conflicts (REC) Role isolation(RI), Self-role distance (SRD), Role erosion (RE), Role ambiguity (RA), Resource inadequacy (RIN), Role stagnation (RS),), Personal inadequacy (PI), Role overload (RO),

Table 3. Congruence between identified factors and ORS scale factors

Identified Factors (Literature Review)	ORS Scale (Dr.Pareek)
1. Physical Distress 2. Individual's Perception 3. Role overload 4. Personality 5. Role clarity 6. Self Image 7. Workplace Environment 8. 8) Role Under load	• Role stagnation (RS) • Role expectation conflicts (REC) • Role erosion (RE) • Role overload (RO) • Role isolation(RI) • Self-role distance (SRD) • Role ambiguity (RA) • Role Inadequacy(RIN) • Inter Role Distance (IRD) • Personal Inadequacy(PI)

Physical Distress, Resource Inadequacy (RIN)

Resource Inadequacy (RIN): is seen to arise in a situation where one perceives that his personal and material resources are not enough to accomplish his role requirements and demands. An outcome of this is physical pressures on the body. Physical distress as previously explained is explained as Hardship, pain, torture, exertion starvation and physical damage are a result of the bodies general over adaptation to the stressors. It has also been studied as Physical damage as a result of the bodies general over adaptation to the stressors (Selye, 1936).

Self Image, Self-Role Distance (SRD), Inter-Role Distance (IRD)

Self-Role Distance (SRD) arises from a discrepancy that arises between ones concept of the, "self", and the demands made on him by the role that he performs. Thus the individual perceives himself as incompetent for the job. Discrepancies between the way in which individuals view themselves, the ways in which they perceive others as responding to them, and they actually do evaluate them (Lundgren, 1978). It is also reflected in one's Belief in ones capacities (Payne, 1988; Parkes, 1994). Inter-Role Distance (IRD) is experienced when there is a stress due to in congruence between the roles that one performs in his professional life versus his personal roles.

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Role Clarity, Role Expectation Conflict (REC), Role Ambiguity (RA)

In a broad perspective, role clarity can be related to Inter-Role Distance, Role Expectation Conflict and Role Ambiguity.

1. **Role Expectation Conflict (REC):** Arises out of conflicting demands originating from an individual's superiors, subordinates or peers.
2. **Role Ambiguity (RA):** Arises due to a non clarity that arises due to the multitudinous the expectations of one's professional.

Role Clarity arises as a result of Incompatible behaviour, multiple expectations or obligations associated with a single social role (Davis, 1995).A misfit between our capability and role demands (Levi, 1996).

Role Overload, Role Overload (RO), and Personal Inadequacy

Role Overload (RO): This arises from a feeling that one is burdened with a lot of work and responsibilities. Researchers have this as an an over or under load of information or matter (Steinberg & Ritzmann 1990). Personal Inadequacy arises when the individual feels that his resources are not enough to take up the demands of the environment.

Role Under Load, Role Stagnation (RS)

Role Stagnation (RS): arises when one perceives that he has been stagnant and stuck in one role for a considerably long time, also due to a scarcity of developmental opportunities. As previously explained; factors such as underuse of skills, work under load, poor leadership and poor career progress can be attributed to role under load.

Unique Factors Literature From Literature Review, Not Covered by the ORS

The study of organizational stress covers many aspects of stress. Yet, the review of literature shows limitations, in terms of the two factors; Personality and Perception; that are not heavily researched on. The role of personality and individual perception cannot be undermined, as one tries to understand the causes of workplace stress.

1. **Personality:** Incompatible behavior, multiple expectations or obligations associated with a single social role. Individual difference in stress inception such as; personality, self esteem, locus of control, coping style, hardiness, type A, attribution style, demographics, expectations, preferences, commitment, health related factors and abilities (Payne, 1988; Parkes, 1994)Individual Differences such as locus of control, hardiness, and coping resources (Cox & Ferguson, 1991)
2. **Perception:** A Non-specific response of the body to, demand for change, perception (Selye, 1936). It can be explained as perceiving stressor as a stressor (Briner et al., 2004). Responding to an event that could be imaginary or real (Eliot, 1988). It is also a matter of an Individual's own judgment (Holyroyd and Lazarus 1982)

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3. **Work Environment:** This can be explained in the discrepancy in environment its demands of us. A reaction of a particular individual to an environmental stimulus. (Hinkle 1973). Individual and environment coexisting in a dynamic relationship (Folkman, Lazarus, Gruen & DeLongis).

Unique Factors From ORS, Not Covered by Literature Review

1. **Role Erosion (RE):** This arises as one perceives that tasks that are a part of his role are being performed by others.
2. **Role Isolation (RI):** This arises as a person feels that his role is secluded form all the mainstream organizational activities.

Unique Factors Literature From Literature Review, Not Covered by the ORS

Research Instrument

The ORS scale (Pareek, 1993), was used to measure the levels of stress among the employees on ten dimensions of workplace stress. One of the pioneers of research on organizational role stress, Pareek (1993) has reiterated that the performance of any role in an organization has built in potential for conflict due to which stress may arise. The scale has been widely used through researches on Role stress. Pestonjee (1992) observed that ORS is certainly one of the best instruments available presently for measuring role stress, as it has a very high reliability and validity.

The Ten dimensions that measure Role Stress are:

Organizational Role stress was measured using the Organizational Role Stress scale by Dr. Udai Pareek; comprising of 50 items that measure stress on the following 10 dimensions

3. **Inter-Role Distance (IRD):** Is experienced when there is a conflict between organizational and non-organizational roles.
4. **Role Stagnation (RS):** Is the feeling of being stuck in the same role for long due to lack of opportunities or development.
5. **Role Expectation Conflict (REC):** Arises out of conflicting demands originating from Superiors, subordinates or peers.
6. **Role Erosion (RE):** Arises when a role occupant feels that others are performing certain Functions, which should have been a part of his role.
7. **Role Overload (RO):** Is the feeling that one is required to do too much.
8. **Role Isolation (RI):** Arises when a person feels that his role is isolated from the mainstream of organizational life.
9. **Personal Inadequacy (PI):** Is created by the lack of adequate skills and the resulting inability to meet the demands of one's role.
10. **Self-Role Distance (SRD):** Arises from a gap between one's concept of self and the demands of his role.
11. **Role Ambiguity (RA):** Is experienced when there is a lack of clarity about the demands of the role.
12. **Resource Inadequacy (RIN):** Arises when human and material resources allocated are Inadequate to meet the demands of the role.

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For *Role Stress*, the score on each role stress thus ranges from 0 - 20 as the dimension includes 5 items each, having minimum 0 and maximum 4. The overall organizational role stress score is obtained by adding the score of all dimensions. The total organizational role stress score thus ranges from 0 - 200. *Inter-role distance (IRD)* is measured by adding items 1,11,21,31,41 *Role stagnation (RS)* 2,12,22,32,42, *Role expectation conflicts (REC)* 3,13,23,33,43, *Role erosion (RE)* 4,14,24,34,44, *Role overload (RO)* 5,15,25,35,45, *Role isolation(RI)* 6,16,26,36,46, *Personal inadequacy (PI)* 7,17,27,37,47, *Self-role distance (SRD)* 8,18,28,38,48, *Role ambiguity (RA)* 9,19,29,39,49, *Resource inadequacy (RIN)* 10,20,30,40,50.

Inter-role distance (IRD) is measured by adding items 1,11,21,31,41 *Role stagnation (RS)* 2,12,22,32,42, *Role expectation conflicts (REC)* 3,13,23,33,43, *Role erosion (RE)* 4,14,24,34,44, *Role overload (RO)* 5,15,25,35,45, *Role isolation(RI)* 6,16,26,36,46, *Personal inadequacy (PI)* 7,17,27,37,47, *Self-role distance (SRD)* 8,18,28,38,48, *Role ambiguity (RA)* 9,19,29,39,49, *Resource inadequacy (RIN)* 10,20,30,40,50.

Pretesting of ORS Questionnaire

In order to test the reliability and validity ORS, the same was administered to 150 respondents of the hospitality & it industry. The collected responses were tabulated. Reliability and validity tests were conducted on the data to check the validity and usability of the instrument. Cronbach's alpha, KMO measure of adequacy and Bartlett's test of sphericity were checked and found suitable.

The analysis of Table 4 shows that all the items of the ORS scale load appropriately on the factors and have acceptable levels of alpha value >0.5.The ORS scale was thus used as a tool to measure Organizational Stress in the study.

Table 4. Summary of factor analysis

Factor	KMO	Item No.	Loading	Reliability-Alpha Value
Inter Role Distance	.735	01	.788	.784
		41	.766	
		21	.716	
		11	.697	
		31	.693	
Role Stagnation	.712	12	.762	.761
		32	.747	
		42	.715	
		02	.705	
		22	.651	
Role Expectation Conflict	.635	03	.817	.655
		13	.856	
		33	.888	
		43	.841	
		23	.871	

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Table 4. Continued

Factor	KMO	Item No.	Loading	Reliability-Alpha Value
Role Erosion	.680	34	.742	.693
		24	.831	
		04	.817	
		14	.653	
		44	.874	
Role Overload	.761	25	.836	.760
		15	.729	
		35	.678	
		45	.676	
		05	.642	
Role Isolation	.774	26	.851	.805
		36	.841	
		46	.770	
		16	.685	
		06	.624	
Personal Inadequacy	.709	17	.822	.690
		47	.694	
		27	.632	
		37	.602	
		07	.586	
Self Role Distance	.629	08	.819	.624
		48	.803	
		38	.524	
		18	.897	
		28	.759	
Role Ambiguity	.811	39	.860	.821
		09	.813	
		29	.763	
		19	.724	
		49	.645	
Role Inadequacy	.738	20	.817	.698
		30	.766	
		40	.765	
		10	.616	
		50	.506	

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Sample Profile

The study consisted of a sample of 250 professionals. The details of the sample are shown in Table 5.

Table 5. Descriptive representation of the Respondents (N=250)

Variable		Frequency	Percentage
Gender	Male	163	65
	Female	87	35
Designation	Manager	120	48
	Executives	130	52
Qualification	Post Graduate	115	46
	Graduate	135	54
Age	20-26years	99	40
	27-35years	59	24
	36-45years	78	31
	46-58years	14	05
Work Experience	1-5years	35	14
	6-10years	118	47
	11-20years	85	34
	Above 20 years	12	05

Table.5 shows the descriptive representation of the sample group. Among the participants, 163 (65 percent) were men and 87 (35 percent), women. There were 120 (48 percent) managers and 130 (52 percent) Executives. In the qualification demographics, there were 115 (46 percent) Post Graduates and 135 (54 percent) Graduates. After collecting the data, the demographics were analyzed for age. The sample was divided into four brackets of age, 20-26 years 99 (40 percent) respondents, 27-35 years 59(24 percent) respondents, 36-45 years, 78 (31 percent) respondents and 46-58 years, 14 (5 percent). In the work experience category, the brackets were from 1-5 years, 35 (14 percent) respondenrs,6-10 years,118 (47 percent) respondents 11-20 years,85 (34 percent) respondents and Above 20 years, 12 (5 percent) respondents.

Result and Analysis

The following section explains the results of the present study. The Table 6, shows the mean values and SD of the employees on the parameters of role stress.

The highest levels of stress as seen in Table 6. are seen on the parameter of Role Ambiguity, (M=16.12,SD=4.48), followed by Role Overload (RO) (M=16.00,SD=4.48), Inter Role Distance (M=15.87,SD=4.71), (IRD)Personal Inadequacy (PI) (M=15.83,SD=4.62), Role Stagnation (RS) (M=15.80, SD=4.52), Role Erosion (RE) (M=15.66,SD=4.25), Role expectation Conflict (REC) (M=15.48, SD=4.43), Inter Role Distance (SRD) (M=15.20, SD=4.90), Role Isolation (RI) (M=15.14,SD=4.62)

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and Resource Inadequacy (RIN)(M=14.78,SD=5.04). It is seen that the overall levels of stress in the employees of the IT industry are moderate. It is important to keep in mind that measures to control stress are essential in order to control any aggravation in the levels of stress among the employees.

Table 6. Showing mean and standard deviation of role stress of employee in the IT

Variables	No. of Items	Score Range	Mean Score	Std. Deviation	Cronbach Alpha
Inter Role Distance (IRD)	5	5-25	15.87	4.71	.818
Role Stagnation (RS)	5	5-25	15.80	4.52	.839
Role expectation Conflict (REC)	5	5-25	15.48	4.43	.802
Role Erosion (RE)	5	5-25	15.66	4.25	.802
Role Overload (RO)	5	5-25	16.00	4.48	.819
Role Isolation (RI)	5	5-25	15.14	4.62	.837
Personal Inadequacy (PI)	5	5-25	15.83	4.62	.836
Self Role Distance (SRD)	5	5-25	15.20	4.90	.867
Role Ambiguity(RA)	5	5-25	16.12	4.48	.820
Resource Inadequacy (RIN)	5	5-25	14.78	5.04	.889

Examining the Impact of Demographic Variables on Organizational Stress

An in-depth review is done by analyzing the impact of the demographic variables on the organizational stress experienced by the employees. The demographic variables include Gender, Age, Qualification, number of years of work experience and designation of the employee.

The results of Table 7 indicate that there is no significant difference between the Male and Female respondents of the IT sector in terms of Organizational Stress, except for significant difference, $p<0.05$on the parameter of Inter Role Distance (IRD), and Resource Inadequacy (RIN). The result shows that Female employees experience greater levels of role stress than their male counterparts.

The results of Table 8 indicate that There exists significant difference $p<0.05$, among the Managers and Executives of the IT industry in the parameter of Inter Role Distance (IRD), Role Overload (RO), Personal Inadequacy and Self Role Distance (SRD), As indicated by the mean scores, the results show that the Managers show higher levels of stress than the executives of the IT Industry.

The results of Table 9 indicate that there is no significant difference in the levels Organizational Stress based on qualification levels of the employees of the IT industry .We cannot make a clear distinction that based on qualification levels, that either group would be experiencing more or less stress.

Table 10 shows the F-value, significance levels and an interpretation of means through sub script, 'a' and 'b'; with the help of post hoc *Duncan analysis*. As noted above, there is significant difference $p<0.01$ for above given parameters of Organizational Stress. Results indicated that for all the parameters; except Role Overload (RO), Role Isolation (RI) and Personal Inadequacy (PI), there is a significant difference in the mean scores of the Age Group (46-58 years).The overall results indicate that this age group experiences the least levels of Stress among the other age groups of employees, as indicated by the mean scores. For all role stress parameters, there is significant difference $p<0.05$, with the age group

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(46-58years), showing the least amount of role stress as indicated by the mean scores. As shown by the transcripts, the other employees in the age groups (20-26 years) (27-35 years) and (36-45) have similar levels of stress within which, the age group (27-35 years) shows higher levels of role stress. Similar results were confirmed by previous literature that showed the existence of maximum stress among the young professionals of the IT industry, which makes them leave their jobs. Various other studies have also confirmed that stress tends to decrease with ones age and tenure in the organization. There can be various reasons for the same, which could include; increased comfort level, emotional intelligence and one's life tenure. The younger generations are mostly stressed due to aspirations of over achievement and starting family responsibilities. There seems to be no difference for the parameters Role Overload (RO), Role Isolation (RI) and Personal Inadequacy (PI).(Role Overload) and (Role Isolation) and (Personal Inadequacy), arises as one feels burdened due to job responsibilities and a lack of being adept to handle the same with existing resources. It is seen that the young and older employees may feel overburdened. Previous studies confirm that managers and senior positions in the IT industry, shoulder greater responsibilities based on accountabilities; that may lead to greater stress (Spielberger & Reheise, 1994).

Table 7. t- value of male and female respondents of IT industry in relation to organizational stress

	Gender	N	Mean	Std. Deviation	t-Value	df	Sig. (2-Tailed)
Inter-Role Distance (IRD	Male	163	13.1043	4.03628	2.043	248	.041*
	Female	87	14.2414	4.40920			
Role Stagnation (RS)	Male	163	13.7914	4.07106	1.999	248	.141
	Female	87	14.6207	4.52189			
Role Expectation Conflict (REC)	Male	163	12.7178	4.36952	1.429	248	.055
	Female	87	13.8506	4.52006			
Role Erosion (RE)	Male	163	14.7607	3.99820	1.909	248	.360
	Female	87	15.2299	3.56240			
Role Overload (RO)	Male	163	13.2147	4.43574	.950	248	.256
	Female	87	13.9080	4.86954			
Role Isolation (RI)	Male	163	13.4540	4.21374	1.106	248	.380
	Female	87	13.9655	4.67166			
Personal Inadequacy (PI)	Male	163	13.7423	4.14787	.853	248	.367
	Female	87	14.2644	4.70146			
Self-Role Distance (SRD)	Male	163	13.6810	4.24221	871	248	.369
	Female	87	14.1839	4.14148			
Role Ambiguity (RA)	Male	163	12.0184	4.49893	.907	248	.067
	Female	87	13.1609	4.98573			
Resource Inadequacy (RIN)	Male	163	13.1656	4.36493	1.785	248	.018*
	Female	87	14.5402	4.35571			

**Significant at 0.01 level, *Significant level 0.05 level

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Table 8. t- value of managers and non managers of IT industry in relation to organizational stress

	Designation	N	Mean	Std. Deviation	t-Value	Df	Sig. (2-Tailed)
Inter-Role Distance (IRD	Manager	120	14.1667	4.31790	2.437	248	.016*
	Executive	130	12.8846	3.99929			
Role Stagnation (RS)	Manager	120	14.3083	4.52963	.817	248	.415
	Executive	130	13.8692	3.96572			
Role Expectation Conflict (REC)	Manager	120	13.6167	4.90957	1.731	248	.085
	Executive	130	12.6462	3.93328			
Role Erosion (RE)	Manager	120	15.3333	3.99439	1.620	248	.107
	Executive	130	14.5462	3.68973			
Role Overload (RO)	Manager	120	14.0917	4.89211	2.117	248	.035*
	Executive	130	12.8692	4.23421			
Role Isolation (RI)	Manager	120	14.2083	4.63798	2.013	248	.045
	Executive	130	13.1000	4.06507			
Personal Inadequacy (PI)	Manager	120	14.6000	4.69829	2.385	248	.018*
	Executive	130	13.3000	3.90914			
Self-Role Distance (SRD)	Manager	120	14.5000	4.75271	2.347	248	.020*
	Executive	130	13.2615	3.54496			
Role Ambiguity (RA)	Manager	120	12.8500	5.17695	1.407	248	.161
	Executive	130	12.0154	4.18373			
Resource Inadequacy (RIN)	Manager	120	14.1167	4.79703	1.637	248	.103
	Executive	130	13.2077	3.97218			

**Significant at 0.01 level, *Significant level 0.05 level

Table 11 shows the F-value, significant levels and an interpretation of means through sub script, ‘a’ and ‘b’; with the help of post hoc Duncan analysis. As noted above, there is significant difference $p<0.01$& $P<0.05$ for all the parameters of Role Stress.

There is no significant differences in the mean scores except on the parameter of Self Role Distance (SRD).For the parameter of Role expectation Conflict (REC), Role Overload (RO) and Role Isolation (RI); there is a significant difference in the mean scores. As indicated, the highest mean scores are for the group (6-10years) and (11-20years) and the lowest for the (Above 20 years) group. For the parameter of Inter Role Distance (IRD), there is significant difference in the groups (1-5 years) and (above 20 years), the group (6-10years) and (11-20years) forms one group with the highest mean scores. For the parameter of Role Stagnation (RS), there is significant difference in the mean scores of the group (above 20 years), with the lowest mean score. For the parameter of Role Erosion (RE), there is significant difference brought about by the group (11-20 years), also having the least mean scores. For the parameter of Personal Inadequacy (PI), there is significant difference $p<0.05$ between the groups, with the (above 20 years) group) having the lowest men score. For Role Ambiguity (RA), there is significant difference between the three groups, with the group (6-10years) having the highest mean scores and the group (above 20) with the lowest means scores. For Resource Inadequacy (RIN), there is significant difference between the three groups (1-5years), (above 20 years) and the mid group (6-20 years), with this group having the highest mean scores on the parameter.

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Table 9. t- value based on qualification levels of IT industry employees in relation to organizational stress

	Qualification	N	Mean	Std. Deviation	t-Value	df	Sig. (2-Tailed)
Inter-Role Distance (IRD	Post_Graduation	115	13.2870	4.19433	.740	248	.460
	Graduation	135	13.6815	4.20492			
Role Stagnation (RS)	Post_Graduation	115	13.5652	4.45076	1.778	248	.077
	Graduation	135	14.5185	4.02205			
Role Expectation Conflict (REC)	Post_Graduation	115	12.8174	4.68027	.967	248	.335
	Graduation	135	13.3630	4.23843			
Role Erosion (RE)	Post_Graduation	115	14.5652	4.11700	1.362	248	.175
	Graduation	135	15.2296	3.59714			
Role Overload (RO)	Post_Graduation	115	13.5130	4.44926	.181	248	.857
	Graduation	135	13.4074	4.72891			
Role Isolation (RI)	Post_Graduation	115	13.5217	4.36764	.367	248	.714
	Graduation	135	13.7259	4.39713			
Personal Inadequacy (PI)	Post_Graduation	115	14.2957	4.41484	1.249	248	.213
	Graduation	135	13.6074	4.27784			
Self-Role Distance (SRD)	Post_Graduation	115	14.0870	4.27675	.801	248	.424
	Graduation	135	13.6593	4.15046			
Role Ambiguity (RA)	Post_Graduation	115	12.0348	4.97702	1.186	248	.237
	Graduation	135	12.7407	4.43521			
Resource Inadequacy (RIN)	Post_Graduation	115	13.3478	4.64917	.982	248	.327
	Graduation	135	13.8963	4.18111			

**Significant at 0.01 level, *Significant level 0.05 level

Table 10. Post hoc comparisons using the Duncan Analysis, to assess the difference in the levels of organizational stress based on the age group of employees

	Age Groups	20-26 Years	27-35 Years	36-45 Years	46-58 Years	Sig-Value
	N=250	99	59	78	14	
Inter Role Distance (IRD)	Means	12.33a	14.13a	13.65a	9.13b	F(3,246)=6.01,P=0.001
Role Stagnation (RS)		14.03a	14.76a	13.62a	8.60b	F(3,246)=7.35,P=0.000
Role expectation Conflict(REC)		12.17a	13.95a	13.01a	9.10b	F(3,246)=5.38,P=0.001
Role Erosion (RE)		15.70a	15.25a	14.14a	10.40b	F(3,246)=10.09,P=0.000
Self Role Distance (SRD)		13.23a	14.25a	13.23a	10.70b	F(3,246)=2.80, P=0.040
Role Ambiguity(RA)		11.69a	13.32a	12.08a	7.60b	F(3,246)=5.95,P=0.001
Resource Inadequacy (RIN)		13.25a	14.39a	13.05a	10.20b	,F(3,246)=3.84, P=0.010

Note: Means with similar subscripts do not differ significantly and means with different subscript differ significantly.

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Table 11. Post hoc comparisons using the Duncan to assess the difference in the levels of organizational stress based on the number of years of work experience of employees

	Work Ex Groups	1-5 Years	6-10 Years	11-20 Years	Above 20 Years	Sig- Value
	N	35	118	85	12	
Inter Role Distance (IRD)	Means	12.15a	14.55b	14.96b	10.42a	F(3,246)=11.63,P=0.000
Role Stagnation (RS)		13.01a	15.98b	14.79 a,b	9.64c	F(3,246)= 13.72,P=0.000
Role expectation Conflict (REC)		11.80a	14.42b	14.21b	10.64a	F(3,246)=8.26,P=0.000
Role Erosion (RE)		14.72a	15.57a	15.39a	10.92b	F(3,246)=6.46, P=0.000
Role Overload (RO)		11.91a	15.27b	14.33b	11.78a	F(3,246)=9.14, P=0.000
Role Isolation (RI)		12.27a	14.69b	15.06b	10.78a	F(3,246)=10.1, P=0.000
Personal Inadequacy (PI)		13.22a,b	14.44b	14.73b	12.21a	F(3,246)=2.81, P=0.04
Role Ambiguity(RA)		11.19a	13.94b	13.56b	8.21c	F(3,246)=10.76, P=0.000
Resource Inadequacy (RIN)		12.71a	15.11b	14.39b	9.78c	F(3,246)=8.76, P=0.000

Note: Means with similar subscripts do not differ significantly and means with different subscript differ significantly

The results show that the least stress is experience by the employee's whit the maximum tenure in the organization. As cited earlier, age is inversely proportional to the inception of stress in an individual. Hence older employees with greater work experience seem to experience the least amount of stress. As one spends more time in an organization, he becomes familiar with the ways to handle workplace demands. The age and life situation also make the person complacent, as his understanding of work is well developed. Thus organizations need to deal more effectively with the work experience group (6-10 years) and (11-20 years); as that is the most stressed group due to career inhibitions and rising competition.

CONCLUSION

There are many reasons for the inception of role stress amongst the professionals of the IT industry. Overall, results indicate that the professionals experience moderate levels of stress. These moderate levels need attention of the human resource professionals, as they could further lead to mild and alarming rates of stress. Wells et al. (2009) conducted a study that showed a positive relationship between job stress and organizational commitment and a negative relationship between job stress and career commitment. However, this commitment can be improved by means of tools like mentoring (Casado-Lumbreras et al., 2009; Casado-Lumbreras et al., 2011). In any case, the nature of work in this industry is characterized by large workgroups comprising of hundreds of members allocated working together in teams. There may be limited scope towards ownership of a complete process, which could be a reason for dissatisfaction among the employees.

Role Ambiguity (RA) seems to be evolving as the most significant stressor in this industry. Role Ambiguity is a result of non clarity of the expectations of work. A clarity in roles and is experienced by the professionals. Thus, the organizations can make their employees more competent by imparting adequate time bound trainings which will help the employees to see more personal and professional growth prospects. This is followed by Role Overload (RO) and Inter Role Distance (IRD). Role overload

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is resultant of a feeling of having too much work to do, without apt resources. Inter Role distance occurs of the incumbent feels that the various professional roles and personal roles that he plays, are at a clash with each other. This indicates that the employees of the IT industry experience a sense of limitation in resources and time. The hard pressed time lines force them to work under pressures of quick delivery which could lead to role stress. Similar results were confirmed by a study conducted by (Sharma, 2004). Other stressors like Personal Inadequacy (PI) and Resource Inadequacy (RI) are created by the lack of adequate skills and the resulting inability to meet the demands of one's role. This is sometimes results of sufficient training programs that are designed for these professionals.

Comparing with other business sectors the time pressures make it difficult for team members to relieve other members to attain three training programs. Role Isolation is bound to occur when a person feels that his role is isolated from the mainstream of organizational life. This is mostly a result of the nature of tasks that are handled by different teams and their contributions in the overall process. A software developer would have the product or service passed on to the software tester, such that all important appropriations can be made. A lack of ownership in the end product is likely to arise, creating a sense of role isolation. Research and current training practices in the IT industry also show that the training is mostly related to technical skills. The industry needs to focus on behavioral training also that will help the employees in dealing with attitudinal issues related to work and this would help in developing coping mechanisms and well-being.

The role of demographic factors on the conception of organizational stress is also important. We notice that in terms of gender; on the parameters of Inter role distance (IRD) and Resource Inadequacy; women feel more stressed than their male counter parts. Inter Role Distance (IRD) can be explained as a gap between one's concept of self and the demands of his role For example, the role of an executive vs. the role of a husband/wife that one plays in his day to day life. Mostly women have to multitask and play their professional and personal roles parallel, that paves way for a feeling of distance amongst the two extreme roles and the inability to suffice any successfully. Resource Inadequacy (RIN) arises when human and material resources allocated are inadequate to meet the demands of the role. This is also a cause of stress for women. Role Erosion (RE) and Role stagnation (RS) occur as one sees a lack of advancement opportunities in one's career. Previous researches also show that women experience more subjective stress than men (Aziz, 2004). Within the IT industry, it is seen that the skill requirements vary through different projects and the skills of a professional; need to be updated with the fast paced evolution in technology. Thus the cycle time for training needs to be taken care of.

The results also show that education does not contribute to any significant difference among the employees. Both graduate and post graduate employees face equal amounts of stress. In terms of age and work experience, we see that there is significant difference $p<0.05$, with the age group (46-58years), showing the least amount of role stress as indicated by the mean scores. The age group (27-35 years) shows higher levels of role stress. In terms of work experience, we see that the least amount of stress is the group with work ex (above 20) years and the maximum in the age group (11-20 years). The results of the study can be further used to analyze the reasons and initiatives that can be undertaken to reduce role stress amongst the employees of the IT sector. Though the sector shows moderate levels of stress, yet a step in the right direction would be helpful in ensuring that the same does not lead to future burnout and exhaustion.

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Chapter 74
Effects of Human Factors in Process Safety: Analyses of Chemical Industrial Case Studies

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ABSTRACT

Accidents and near-miss accidents in chemical industries are widespread. Most of the incidents occurred due to combinations of organizational and human factors. To identify the causes for an incident of an accident analysis is needed, because it reveals the possible causes behind the accidents. Accident analysis shows the human and organizational factors that support learning from the events. Literature review shows that human error plays an important role of accidents in process industries. The chapter discusses some case studies which are received very little media publicity and also no proper assessment. At first reports on the incidents were collected from newspapers and then the place was visited to conduct an interview with local people and present and past workers with the help of the PESO (M/S Petroleum and Explosive Safety Organization, Eastern Region, Govt. of India).

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INTRODUCTION

Among industrial sectors chemical industry is one of the important and biggest industrial sectors. It is also an important source of employment sector. Small scale chemical industries manufacture products often run as a batch operation and large-scale production is mostly run as continuous operation. In both cases there may be various kinds of technical systems like chemical reactors (which often have to withstand high or low temperatures and pressures), separation devices (distillation, filtration, etc.), and fluid systems for liquids and gases (pumps, valves, tanks), etc. Large or small scale both chemical industries handled harmful and hazardous chemical for large production. The complex nature of chemical plants increases the health risks of workers. As new industries develop with new technologies then automatically risk arises on human health. Each year all over the world a large number of workers from chemical industries are suffered from work related accidents and illness. Workers suffer from acute effects such as poisoning suffocation; long-term affects respiratory diseases, occupational cancers and health effects that can be both acute and long-term, such as skin diseases, allergies, reproductive problems and birth defects.

There are many types of chemical plants such as refineries, power plants, wastewater plants, biochemical plants etc. Recent years due to rapid development most of plant use more complex technology which create more unsafe process conditions. In general, as the chemical process plant handled dangerous substances and their plant complexity, they can be characterized by a high accident potential. The number of accidents occurred in chemical industries due to different reasons, but one of them is the worker ignorance, as they are not appropriately trained. Sometimes they have a lack of basic knowledge, and also skills. Plant operators are monitor and control the plant for proper functions, so they have responsibility to save equipment and workers health and safety. Due too much stress or pressure some time they play wrong performance. To identify the actual causes for an incident an accident analysis needed, because it informs the unsafe work procedure, analyze how human and organizations failures create unsafe situation which leads accidents that support learning from the events.

Accident analysis carried out to discover the real causes of an accident and also recommend the preventive measure. It also gives useful information to plant personnel in future how to prevent plant operations from accidents. For improvement of process plant safety, it is very important to analyses the past accidental case studies. Because it not only gives the useful information, it also increases knowledge of workers and inform the safe practices. In recent years many research works identified the causes of accidents and lessons learn. Accidental analysis showed that not only one single cause responsible for major accidents but most have multiple and interrelated factors. If accidents are properly reported or investigated then the causes are identified properly and recommended some preventive measures for control future similar accidents. At first collecting the facts, then analyses the gathering information, identify the main causes and then implement the plan of action for future prevention. Many researchers research on Process safety and have analyzed incident or accidents and find out new risk situations. This chapter focused on how to analyze human factors. According to Rassmussen et al. (1990) "Human Factor" plays a part of operators, designers or managerial role which leads error and also worked on the psychological factors and industrial analysis to develop human error taxonomies. Literature review shows that various works has been done on human factor analysis to control hazardous situations and also save life and property. PHA, QRA, HAZOP, HRA, WHAT-IF, FTA, FMEA, SWOT, JHA etc. analysis gain information about how and why situation become uncontrollable, wrong approaches, real unsafe situation, inadequate risk control management and also prevent similar adverse conditions, increase safety knowledge of workers.

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PHA or Process Hazard Analysis used for finding, evaluating and controlling unsafe situations of process. Conducting PHA, also need a PHA team included safety specialist, engineers, supervisors, workers who have sufficient safety knowledge about safe plant operation. PHA is one of the most important elements of PSM (Process Safety Management). QRA or Quantitative Risk Assessment used for measuring total safety management of a chemical process industry. QRA identify the risk zone of storage area or handling process of chemical products. This process also recommends some preventable measures for save human live, environment and property. QRA widely used as for assessing oil and gas installations like refineries, tanks, pipelines, terminals, etc. HAZOP is a review process. HAZOP team finds out the possible causes and consequences of the deviation as well as existing safeguards protecting against the deviation. If any unsafe situations are detected, then they recommend some risk prevention actions. HRA or Human Reliability Analysis measures human reliability and the probability that workers perform the full task correctly in a fixed time. HRA is a group of many different methods like THERP, CREAM used as commonly. HRA is a method under of QRA. Swain and Guttmann (1983) present methods, models and estimated human error probabilities in nuclear power plants. According to Hollnagel (2005) HRA maximum used on its own both ways to assess the risk from human error and as a way to reduce system vulnerability. Kirwan (1994) stated that HRA has three principal functions as identifying what error can occur (Human Error Identification), deciding how likely the errors occur (Human Error Quantification) and enhancing human reliability by reducing error likelihood (Human Error Reduction). FTA is also known as Fault Tree Analysis is a software tool where analysis starts with an unwanted event and identifies the root causes. The result is represented as a logical diagram. FMEA or Failure Mode and Effect Analysis is used to eliminate faults in a system before they occur. Results are displayed in a table form like causes, effects, frequency, severity, probability and recommendations. WHAT-IF, SWOT and JHA analysis are briefly discussed in case study analysis section of this chapter.

The present chapter discusses the safety issues or risk factors associated with human factors. It informs about unsafe behavior of wrong task performance of workers and management. Three accident case studies of chemical industries are discussed in the present chapter where human factors play as a primary cause, but it is received very little media publicity and also no proper assessment. This chapter is useful for academician, practitioners, safety personnel, managers and workers who directly or indirectly associate with process safety management.

BACKGROUND

Process safety or workplace safety is not a new term. Research work started on workplace safety in the early 1980s. Zohar's (1980) study on safety climate received scant attention on organizational and psychological factors which are effects on safety climate. Nowadays, most companies/industries give priority to safety first. So, it is necessary for every process plant to include safety programme for their workers. For better safety performance, it is essential to investigate and analyze past accidents. It not only gives awareness about the causes behind accidents but also identifies, evaluate, and reduce occupational risks.

Most of the accidental factors related to:

1. **Task:** Ergonomics, process, materials, workers, safety work procedures, long hour of work
2. **Material:** Hazardous substances, faulty design of machine

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3. **Environment**: Weather, temperature, improper light, personal protective equipment, noise, improper ventilation, workspace
4. **Human Factors:** Physical and mental capability like age, experience, training, health absenteeism, fatigue, frustration, alcohol addiction, carelessness, inattentive, ignorance
5. **Management Error:** Safety policies, safety knowledge, preventive measures

Industrial accidents directly effect on both public and environment. Accidents may damage the industrial economy and also results in injuries, pain, or even death of workers.

MAIN FOCUS OF THE CHAPTER

Industries are the backbone of economy to a nation. It produces goods from raw materials and engaged in making particular product or providing a particular service. There are many types of industries like agricultural industries, manufacturing industries, construction industries, craft industries, mining industries, chemical industries etc. Each industry has its own hazards. Among them chemical industries is one of the more accidents prone sectors.

Why Chemical Industries are More Unsafe

Chemical process plants handled and manufacture complex and hazardous chemicals in a large scale. Different chemical plants have different type of work procedure. All plant structure also different from designing. Some have fluid system and chemical reactor system, some have storage pressurized tank. Due to development of industrialization, the chemical plant structure change for continuous growth of complex materials with complex process equipment, technology in manufacturing process. Chemical process plant handled dangerous substances, so it is a high accident potential sector. Chemical plants need more attention because it stored large quantity of flammable and toxic materials. Hazardous chemicals have acute effects like poisoning, suffocation, long time effects like respiratory diseases and occupational cancer, skin injuries (skin burns, skin cancer), allergies, reproductive problem, birth defects etc. Chemical inhalation or irritant chemical substances may result asthma, chronic obstructive pulmonary diseases and chronic bronchitis. Exposure to diesel motor exhaust may cause of lung cancer. Certain substance from petro-chemical industries such as toluene and xylene effects on reproductive systems. Carcinogens that may be present in benzene, 1,3 butadiene, ethylene oxide etc.

Survey work done by Khan and Abbasi (1999) reveals that 1744 significant accidents have occurred in chemical industries during the period 1928 - 1997. Analysis of some major accidents and disasters in last few decades have given some valuable lessons like Texas city disaster in 1947, the worst ever accident in the chemical process industries involving toxic release occurred at Bhopal in 1984, offshore accident occurred in Piper Alpha in 1998, Flixborough disaster was an explosion at a chemical plant in 1974, Chernobyl disaster was a nuclear accident that occurred on 1986, Texaco refinery fire in 1994, Vishakhapatnam refinery in 1979, etc. A summary of major catastrophic accidents of chemical industries is presented in Table 1.

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Table 1. Major accidents in chemical industries

Year	Location	Chemical	Event	Deaths/Injured
1926	St. Auban, France	Chlorine	Toxic release	19/105
1928	Homburg, Germany	Phosgen	Toxic release	10/50
1939	Zarnesti, Romania	Chlorine	Toxic release	60
1943	Ludigshafen, Germany	Butadiene	Explosion	57/37
1944	Clevelland, Oll	LNG	Fire and explosion	128/300
1947	Rauma, Findland	Chlorine	Toxic release	19/200
1947	Texas City, TX, USA	Ammonium nitrate	Explosion	552/3000
1948	Ludigshafen, Germany	Dimethyl ether	Explosion	245/2500
1950	Poza Rica, Mexico	Hydrogen sulphide	Toxic release	22/320
1954	Bitburg, Germany	Kerosine	Fire	32/16
1959	Meldrin, GA, USA	LPG	Explosion	23/78
1959	Ube, Japan	Ammonia plant	Explosion	11/40
1960	Kingsport, TN, USA	Aniline plane	Explosion	15/55
1962	New Berlin, TY, USA	LPG	Explosion	10/75
1965	Natchitoches, LA, USA	Natural gas	Explosion	17/56
1966	Freyzin, France	Propane	Fire and explosion	18/83
1968	Lievin, France	Ammonia	Toxic release	5/35
1969	Repcelak, Hungary	Carbon dioxide	Explosion	9/23
1970	Philadelphia, Panama	Catalytic cracker	Explosion	7/43
1972	Rio de Janerio, Brazil	Butane	Explosion	37/53
1972	Netherland	Hydrogen	Explosion	4/40
1972	West Virginia, USA	Gas	Explosion	21/20
1973	Kingman, AZ, USA	Propane	Fire	13/89
1974	Czechoslovakia	Ethylene	Explosion	14/79
1974	Flixborough, UK	Cyloheane	Explosion	28/76
1974	Madras, India	Potassium Sol.	Hot release	9/15
1975	Beek, Netherland	Propylene	Explosion	14/108
1976	Seveso, Italhy	TCDD	Toxic release	1/>300
1977	Gujarat, India	Hydrogen	Explosion	5/35
1978	Santa Cruz, Mexico	Propylene	Fire	52/88
1984	Sao Paulo, Brazil	Gasoline	Fire and Toxic release	508/221
1984	Mexico City, Mexico	LPG	Fire and explosion	550/23
1984	Bhopal, India	MIC	Toxic release	2500/100,000
1985	Brazil	Ammonia	Toxic release	>5000 evacuated
1985	Priola, Spain	Ethylene	Explosion	23/11
1985	Algerais, Spain	Naphtha	Explosion and Fire	18/56
1986	Basel, Switzerland	Fungicide	Toxic release	Severe damage to ecosystem
1988	Piper Alpha, UK	Hydrogen	Explosion	167/55
1988	Maharashtra, India	Naphtha	Fire	25/23
1989	Antwerp, Belgium	Aldehyde	Explosion	32/11

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Table 1. Continued

Year	Location	Chemical	Event	Deaths/Injured
1989	USSR	Ammonia	Explosion and Fire	7/57
1989	Pasadena, TX, USA	Ethylene	Explosion	23/314
1989	Phillips, USA	Ethylene	Explosion	23/130
1990	Thane, India	Hydrocarbon	Fire and Explosion	35/10
1992	Sodegraura, Japan	Hydrogen	Explosion	10/7
1993	Panipat, India	Ammonia	Explosion and toxic release	3/25
1994	Dronka, Egypt	Fuel	Fire	410
1995	Gujarat, India	Natural gas	Fire	-
1996	Bombay, India	Hydrocarbon	Fire	2/45
1997	Chennai, India	LPG	Fire	3 /4
1997	Chennai, India	Molten metal	Explosion	2/5
1998	Hahnville, Louisiana, USA	Nitrogen	Asphyxiated by nitrogen	1/1
1998	New Jersey, USA	Yellow 96	Runaway reaction	0/7 2 severely burnt
1999	Martinez, California, USA	Naphtha	Fire	4
2001	Hangzhou, China P Rep	Aniline	Gas Leakage	0/700
2002	Missouri, USA	Chlorine	Toxic release	63 people seek medical evaluation
2002	Shenxian (Shandong province) China P Rep	Ammonia	Gas Leakage	13/11
2003	Kentueky, USA	Aquo ammonia	Explosion	1/26 evacuated
2003	Miami Township, Ohio, USA	Nitric oxide	Leakage & Explosion	Severe damage the plant
2004	Skikda, Algeria	LNG	Explosion	27/74
2004	Near Santiago, Chile	Acidic Chlorohydroquenone	Chemical spill	0/2 500 affected
2004	Songjia (Panjing, Liaoning), China P. Rep.	Hydrogen sulphide	Gas Leakage	0/120
2004	Oigihar (Heilongjiang) China P. Rep	Chlorine	Gas Leakage	0/134
2004	Fuzhou (Fujian province) China P. Rep.	Phosgen	Gas Leakage	1/300
2004	Houston, USA	Raw material for polyethylene wax	Explosion	2 firefighters injured during emergency response
2005	Perth Ambay, NJ, USA	Liquid waste in acetylene generator system	Explosion	3/11
2005	Juba, Sudan	Store ammunition depot	Explosion	31/150 4,000 homeless
2005	Hauinan (Jiangsu), China P. Rep.	Chlorine	Gas Leakage	27/285
2005	Texas City, USA	Hydrocarbon liquids and vapours	Sudden release of flammable liquids and vapours	15/170
2005	Lahore, Pakistan	Ammonia	Explosion	27/8

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Indian industry benefited credibility from the past in the mind of the common man who saw in its hope for better tomorrow. However, the Bhopal tragedy shook this credibility, thereby set bay in motion a process of revolution and rethinking. Industries were established in India as early as in the 1850s. Large-scale industrialization, however, started after the country became independent in 1947. Today India is one among the top 10 most industrialized nations in the world. Planning commission (1997) of India revealed the information that Indian labour force had grown to 397.2 million, which is nearly 42% of the total population (951.2 million) of the country. Due to improvement of Industrialization in India the more and more complex industries established and work with hazardous materials for growth of production. So workers handled hazardous toxic and harmful materials which increase the number of occupational injuries and deaths. According to the International Labour Organisation informed that in India more than 403,000 workers died per year due to work related problems or due to unsafe working conditions. It also informed that every day more than 1,000 and per hour 46 workers died due to occupational cancers or diseases. There is very little awareness about workplace hazards due to lack of access to information, education, and training, working conditions effects on the body as well as the mind of workers. A various study indicates that in many factories and services in developing and developed countries, workers are exposed to a different physical and psychological problem. In present situation lack of safety awareness, safety education, safety training, implementation programmes are very poor.

Process Safety Information

Government has emerged several rules and regulations for reducing the impacts of fire and explosions occurred due to chemical releases in chemical process plant. These are developed based on previous incidents that occur in process industries and their impact on process industries. Hence, the incident records are necessary and essential to learn a lesson from the mistakes. Only few accident databases are available in developed nations like MARSH (Major Accidents Reporting system), MHIDAS (Major Hazard Incident Data Service), HSEES (Hazardous Substances Emergency Events Surveillance), ARIP (Accidental Release Information Program), ERNS (Emergency Response Notification System), ARIA (Analysis, Research and Information on Accidents) etc. but unfortunately in India no such databases exist. Analysis of previous incidents as an essential aspect to reduce the frequency and severity of the future incident and also provides more accurate information which evaluates the industry's safety progress. Ministry of Labour and Employment of India tried to improve occupationally save the workers from mines, factories and ports. So, obtain to this principles incorporated in the constitution of India in the area of occupational health and safety in the above three categories implement laws and regulations which cover the areas of industrial safety, health and hygiene, industrial medicine, workers training and safe procedure of productivity, communication, primary accident hazards control, computer center.

Analysis of Incident

Investigation and analyzing any incident or accident are essential for process safety. Analyses are established both direct and indirect causes. Analyses results also measure the frequency and seriousness of accidents. Analysis method should be useful in

- Exposure of hazardous materials which will be susceptible to risk migration;
- Identify the high-risk operation;

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- Analysis technique must be of use new safe process; at first, it analyzes new technology in a process and identifies hazards and changes and recommends safe operations.

So, analyses of incidents give more accurate and relevant information on the industry's safety progress in the future. For any general accident analysis, at first investigate the accidental data – gathering information, reconstructing events establishing what happens, then analysis the incident step by step. Various type of hazard analysis techniques used for analyzing accidents or incidents in recent years. Table 2 represents some accident analysis or accident investigation methods. Each methods has own strength and weaknesses and each has different application. Sometimes combination of methods used to analyses of complex accidents.

Table 2. Some incident/accident investigation/analysis methods

Sl. No.	Name of Incident/Accident Investigation/Analysis Methods
1.	ARCA – APOLLO Root Cause Analysis
2.	Black Bow Ties
3.	DORI – Defining Operational Readiness To Investigate
4.	ECFA – Events and Causal Analysis (Charting) and ECFA+ - Events and Conditional Factors Analysis
5.	Fishbone diagram
6.	HERA – Human Error Repository and Analysis System
7.	HERA-JANUS – Human Error Reduction in ATM (Air Traffic Management)
8.	HFACS – The Human Factors Analysis and Classification System
9.	HFAT – Human Factors Analysis Tools
10	HFIT – Human Factors Investigation Tool
11.	HSYS – Human System Interactions and allied industries (and others)
12.	ICAM – Incident Cause Analysis Method
13.	MEDA – Maintenance Error Decision Aid
14.	MORT – Management Oversight and Risk Tree
15.	PEAT – Procedural Event Analysis Tool
16.	PRISMA – Prevention and Recovery Information System for Monitoring and Analysis
17.	SCAT® – Systematic Cause Analysis Technique
18.	SOL – Safety through Organisational Learning
19.	SOURCE™ – Seeking Out the Underlying Root Causes of Events
20.	Storybuilder
21.	TapRooT®
22.	(Kelvin) Top-Set®
23.	STEP – Sequentially Timed Events Plotting
24.	TRACEr – Technique for Retrospective and Predictive Analysis of Cognitive Errors
25.	Tripod Beta
26.	WBA – Why-Because Analysis

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Table 2. Continued

Sl. No.	Name of Incident/Accident Investigation/Analysis Methods
27.	5 Whys
28.	Why Tree
29.	HRA – Human Reliability Analysis
30.	RTA – Root Cause Analysis
31.	CTA – Cognitive Task Analysis
32.	PHA – Process Hazard Analysis
33.	MCA – Maximum Credible Accident Analysis
34.	SCAP – Safety Credible Accident Probabilistic fault tree Analysis
35.	JHA – Job Hazard Analysis
36.	SWOT – Strength Weakness Opportunities Threats analysis
37.	FTA – Fault Tree Analysis
38.	FMEA – Failure Modes and Effects Analysis
39.	HAZOP - Hazard and Operability Analysis
40.	Cause-consequence analysis
41.	ETA - Event Tree Analysis
42.	LOPA - The Layer of Protection Analysis

According to Bird and German (1992), Reason (1997) and Glendon et al. (2006) analysis of an accident is very important because it identify the possible unsafe working conditions like improper work planning of the organization, insufficient training, lack of attention, deficient maintenance of technical equipment, absent of job descriptions, wrong choice of materials or non-use of safety equipment and lack of attraction of employees. The qualitative, quantitative hazards, and risk techniques are commonly used are pointed below. Qualitative analysis is descriptive measurement and depends upon the decision making skills of organizational personnel to determine the impact of risk probability, like health and safety risk. Quantitative analysis is used to analyses accidents case studies in a more developed risk model, depending on the quality of the data inputted. This assessment can point out more useful information that can help safety risk assessment.

Qualitative Techniques

These methods are usually used to identify the potential accident scenarios and evaluate in detail to make a reasonable judgment of risk. These techniques are,

1. Preliminary Hazard Analysis (Pre HA/PrHA/PHA)
2. Checklist
3. What-If Analysis
4. What-If/Checklist Analysis
5. Hazard and Operability (HAZOP) Analysis
6. Failure Modes and Effects Analysis (FMEA)

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Quantitative Techniques

These methods judged the risk of judgment by provides more detailed and statistical evaluations of the risk of a specific accident scenario. These techniques are,

1. The Layer of Protection Analysis (LOPA)
2. Dow Fire and Explosion Index (F&EI)
3. Dow Chemical Exposure Index (DCEI)
4. Fault Tree Analysis (FTA)
5. Event Tree Analysis (ETA)
6. Cause-consequence analysis
7. Human Reliability Analysis (HRA)

The Human Factor in the Chemical Industry

In recent years the chemical process industries have achieved in optimization of plant design and also inherently safe plant. However, in chemical process plant small and sometimes major accidents do occur and recur, many of them have quite similar characteristics. Joschek (1981) and Bea (1996) showed that 80% accidents occurred in chemical and petrochemical have due to human failure as a primary cause, and these are approximately lost 30 million working days. Human error was mostly responsible in the 514 industrial incidents of potential major consequence in Canada as reported by Lees and Laundry (1989). Salminen and Tallberg (1996) reported that in Finland, human error is a prime factor of 84-94% of 300 hazardous material events in the workplace resulting in fatal and serious injuries. Chung and Jefferson (1998) observed that the chemical industry as a whole does not learn from past accidents. Most human errors are the result of either moment's forgetfulness/aberration, or the errors of judgment. Inadequate training or instruction or inadequate supervision are one of the main causes as reported by Kletz (2001). Löwe and Kariuki (2004) reported, based on a survey conducted by Technische Universität, Berlin, that 64% of the total in Germany, industrial incidents are due to human failure. Gangopadhyay and his subsequent publications (Gangopadhyay and Das, 2005, 2007 a, b, c, d, 2008 a, b, 2009 a, b) indicated that need of accidental analysis and also to find the root causes for the safety application in chemical process industries. Zhang and Zheng (2012) demonstrated that the chemical accidents in hazardous installation in China from the year 2006 – 2010 are due to human errors, i.e., exclusively 46.8% or partially (human and equipment) is 18.3% out of 1632 hazardous chemical accidents. Kidam and Hurme (2013) analyzed 549 accident cases from the Japanese Failure Knowledge Database (FKD, 2011). They observed about 66% (364 out of 549) of the cases are chemical process industry related. They observed that the accident contributors are the human and organizational failures (20%), contamination (12%), heat transfer (12%), flow-related problems (11%), reaction (9%), layout (7%), fabrication construction and installation (7%), corrosion (6%), construction materials (6%), static electricity (3%), mechanical failure (2%), external factor (2%), vibration (1%), erosion (1%), utility-related problems (1%). Qi et al. (2012) observed that the accidents occurred on a regular basis in the chemical process industries due to insufficient understanding to recognize to the best actions and lack of drive for safety improvement in the organization. They also reported the following issues for process industries,

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- The organization has no memory – Similar incidents occurred in a different part of the world, and it is due to organizational failure as they failed to develop "organizational memory". Kletz (1993) and Mannan et al. (2009). The organizations failed to progress and execute effective learning from past incidents.
- Inadequate observation to main factor - Many factors contribute the safe operation of a plant, but the failure of maintenance of such factors like cost reduction, decrease training, the communication gap between management and workers, lack of supervision, workers fatigue, inadequate instrumentation, and improper equipment maintenance. Threat due to terrorism in chemical process industries has a new concern according to Bajpai and Gupta (2005), Reniers and Amyotte (2012).
- The growing complications of process operations and lack of communications – Modern chemical process industries are very complex and complicated. Poor management, lack of awareness, improper training may lead to an accident.
- Risk is also increased because of large population density in the off-site of the plant.

Human Factors and Human Errors

According to Health and Safety Executive (2005), the human factor is defined as "Environmental and organizational and job factors, system design, task attributes, and human characteristics that influence behaviour and affect health and safety".

The human error is defined as "Any human action or lack thereof that exceeds or fails to achieve some limit of acceptability, where limits of human performance are defined by the system" according to Lorenzo, (1990).

Bea et al., (1996) describe human error as a subset of the human factor, and the meaning of human error is unsafe acts made by worker in workplace. Human factors have received scant attention for various reasons in the process industries and are as follows:

- Lack of awareness
- Lack of understanding
- Lack of need
- Misunderstanding of human factors
- Lack of integration
- Lack of approaches to remediation of some human factors issues
- Lack of qualified analysts
- Lack of motivation

May and Deckker (2009) stated that the most of the human failures occurred due to lack of knowledge, underestimation of influence, unawareness, insufficient attention and negligence, poor memory or laps of memory, depending on others insufficient control, fault situation, unspecific definition of responsibilities etc. These are all cognitive factors of workers which reflect on the behavior of the workers. There are three related elements which determine the human factor and are

1. Job characteristics
2. The nature or behavior of the worker
3. Organizational systems and culture which may or may not include a safety management system.

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Understanding Human Factors

Research shows that 50% – 90% of industrial incidents can be attributed to human error. So the attention must go to the unsafe acts by human as the most probable cause of frequent accidents happening in industries. Hence, human factors are an essential factor for accident prevention and are also necessary to control the occupational health of the workers. The traditional viewpoints of accidents are as follows

1. Accidents are caused by workers by inattention or ignorance of rules/ procedures;
2. Therefore accusation each other;
3. Prevention is then by following safeguard procedures, correct actions, safety training, strict supervision for the individual.

To increase process safety detect human factors, human abilities and barriers must first be understood at first,

- **Attention:** It is a cognitive process that means how human actively collect and save information and use them in a proper working conditions.
- **Perception:** It is a process where human collect information from their environment and used that information in order to interact with their environment safely. So, always correctly perceive. Work environments sometimes change human perception systems and information which not properly explained.
- **Memory:** It is the capacity to remembering information from the past experiences and in order to use this information in present situation often put undue pressure.
- **Logical Reasoning:** It is one of the fundamental skills of effecting thinking. In failures in reasoning and decision making can affect complex systems such as chemical plants, and tasks like maintenance and planning.

Classification of Human Error

Human error classifications facilitate the identification and analysis of human errors. There are various ways of classifying human errors. The simplest is the classification by mode or action according to Swain and Guttmann (1983) are as follows

- **Omission Error:** Proper working procedure is not followed.
- **Commission Error:** Wrong working procedure performed.

Generally, human error can be categorized into two steps, i.e., unintentional and intentional. The unintentional step further categorized in more steps, as

- **Slips:** When the wrong action is performed.
- **Lapse:** When an action is omitted, or memory failures occurs.
- **Mistakes:** If a rule or work procedure has been forgotten or never fully understood.

The intentional step further categorized into the following step as,

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- **Violation:** Operator breaking organizational rules or operates unsafe procedures intentionally, etc.

Meister (1962) categorized human errors as errors in operations, design, maintenance, fabrication, inspection, and contributory. Operating errors result from the wrong operation/handling of equipment by the human, and it may be due to motivational error, wrong action performance, failures to follow procedures etc. Design errors occur due to improper design practices. Maintenance errors are failure to carry out right procedure. Other maintenance errors are the error of calibration of equipment, repair and installation etc. Fabrication errors result from poor quality, use of incorrect component, use of incorrect material of construction, and departure from the drawing supplied. Inspection errors result from inadequate inspections that mean anybody breaking organizational safety rules or hide any faulty work process in the time of inspection.

Lincon (1960) indicates that operating error further classify five types of errors as

1. **Attention Errors:** The operator fails to concentrate that require attention.
2. **Memory Errors:** The operator does not remember the actual task procedure or fails memory to perform required task is call memory errors.
3. **Interpretation Errors:** When operator could not understand the right meaning of given information by plant personnel and perform the task incorrectly.
4. **Operation Errors:** The unsafe or incorrect work procedure followed by the worker.
5. **Identification Errors:** The items are not identified.

The combination of Attention errors and memory errors are the errors of omission whereas interpretation, operation, and identification errors are commission errors.

Managing Human Factors

According to HSE (Health and Safety Executive) the fundamental principles of managing Human Failure are

- Human failure is reasonable and predictable. Human factor can be identified by analyzing accidental case studies and it is also manageable. All process industries should include safety management system to reduce human factors.
- Implement good human factors in engineering. It is also called ergonomics, which are concerned with design jobs, operating process, mechanism of machines, and suitable working environment. Ergonomic factors like improper vision, improper motor controls, uncomfortable posture in work procedure and work overload in insufficient time schedule should be prevented.
- Human errors can be prevented by clear, accurate procedures and instructions which also improve workers skill and memory.
- Risk assessment and accidents investigation should identify where human failure can occur in safety critical tasks.
- Manage working areas conditions, e.g., extremes of heat, humidity, noise, vibration, poor lighting, and insufficient workspace.
- Manage workload.
- Social and organizational factors, e.g. insufficient staffing levels, long hour work schedules, unawareness about health and safety; should be manage.

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- Psychological and social factors should be managing, like high levels of tiredness, family problems, health problems, addiction of alcohol and drugs.
- Providing proper supervision particularly for inexperienced staff, plant inspection and check proper maintenance in regular interval of time.
- Provide job relevant training and practices for managing abnormal and emergency situations.
- Develop new safer working methods through new procedures can reduce human factor and enhance safe environment in workplace.
- Identify unsafe behaviors associated with previous accidents.
- Inform the workers about how to use of personal protective equipment for individual safety and also give safety knowledge about general housekeeping, access to heights, lifting and bending, and contact with chemicals.

Three accidental case studies of chemical industrial accidents are discussed to find out the actual causes and human factors behind the incident.

CASE STUDY 1

Leakage of Chlorine from a Baby Cylinder

The Incident

A small unit manufactured calcium hypochloride solution by passing chlorine into lime solution. The occupier brought a cylinder of chlorine (baby cylinder – 60 kg. capacity) from the nearby dealer for the preparation of hypochloride solution. During the nighttime, the cylinder, which was kept lying in the ideal condition started leaking from its bottom all on a sudden. The worker brought some ice from the nearby shop and kept the cylinder in the ice pot with anticipation that the chlorine leak from the cylinder will stop if the cylinder is cooled down by ice. After a few minutes the leak increased instead of stopping.

Chlorine gases profusely spread from the cylinder and dispersed according to the direction of wind affecting the people on its path in the adjacent houses, 4 people died by the chlorine gas and other 87 people were injured. The calcium hypochloride unit was located in a heavily populated area in a metropolitan city, Kolkata and most of the buildings were multistoried, normally shops were in the ground floor and residential accommodation from first floor onward. As the chlorine gas is heavier (vapor density of 2.48 gm/cc) than air it spreads in very little quantities in the first floor level. 87 people were affected who needed only first aid treatment for the minor injury by inhalation of the chlorine gas.

Incident Analysis

The main event was identified as

1. The chlorine cylinder was badly corroded.
2. Chlorine dispersed according to the wind direction and caused the death and injury.
3. No emergency first aid response was present.

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Major Contributing Conditions Were Also Identified

- The man engaged in the manufacturing process had no knowledge regarding the hazards of the chlorine.
- The management and the worker were ignorant. The management's reaction was to put the chlorine cylinder on the ice pot and the reaction of the metals of the chlorine cylinder with chlorine and water ultimately increased the diameter of the leaky portion of the cylinder.

Corrosion Mechanism

Carbon steel is most common material of construction of baby cylinder. The dry chlorine reacts with the iron present in carbon steel as

$$2Fe + Cl_2 = 2FeCl_3$$

The ferric chloride is formed a proactive layer on the steel surface, however it is very hygroscope, and absorbs moisture and water, which accelerates the rate of corrosion (The Chlorine Institute, 2000).

The chlorine reacts with water to form hypochlorous acid (HOCl) and hydrochloric acid (HCl) as

$$Cl_2 + H_2O = HOCl + HCl$$

The hypoclorous acid is unstable and dissociates as,

$$2HOCl = 2HCl + O_2$$

According to Updyke (1982) and Saroha (2006) in the presence of water the protective layer of ferric chloride is dissolved. The acids and the dissolved salt enhance the corrosion of the cylinder.

Lessons Learned From this Incident

1. Implement the safe maintenance and gain knowledge about risk management.
2. Always perform the job safety analysis under the guidance of trained personnel and also understand the outlines of total incidents. Methods statements should be prepared which clearly define roles, responsibilities and the controls to be applied.
3. Inform chlorine cylinder supplier's about the safe procedure of carrying chlorine cylinder.
4. Cylinder leakage should be addressed to the manufacturer or local task force to tackle this problem immediately and to provide PPE's.
5. Arrange awareness programme on chlorine related hazards and motivated to participation of all staff.

What-If Analysis

The What-If method is the least structured of the creative Process Hazard Analysis techniques. It is a brainstorming approach in which a group of experienced people familiar with the subject process ask

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questions or voice concerns about possible undesired events. This analysis starts a series of questions that begin with, "What if…?" What-If questions can be formulated around human errors, process upsets, and equipment failures and each question represents a potential failure or miss-operation of the process. Then the "Consequence" which is the effects of What-if condition traced all the way to the loss event. Then the operator's responses are evaluated to determine if there is a chance or possibility of potential hazard. If so, then the proper modifications of the system should be recommended.

This method quickly focuses on issues that are critical and the speed of What-If analysis also helps reduce the boredom. It is also good at analyzing global issues, such as loss of utilities or the impact of a major fire.

Due to its lack of structure, the success of a What-If analysis is highly dependent on the knowledge, creativity, experience and attitudes of the individual operators. The "What-if" table generated for the human factor analysis shown in Table 3.

Table 3. What-if analysis

What - if questions	Consequences	Recommendations
If the chlorine cylinder titled to facilitate the leak of chlorine gas	The amount of chlorine leak is minimum	Ideal solution for initial period of liquid chlorine leakage.
If the leak cylinder put on the ice-pot	Increase in leak due to corrosive action with water	Educating workers about the hazards of chlorine and also encourage to participate in training and monitoring programs in the work place and set-up emergency plan.
If chlorine gas come out from the chlorine cylinder	It may fume while on contact with moist air and create highly corrosive atmosphere	Establish an emergency response plan for responding to leaks and also arrange the proper training for workers.
If chlorine gas spread offsite	Severe irritant to the eyes and respiratory system and also burn the skin	Establish an emergency response plan for responding to leaks.
If the workers are illiterate or if the operating procedure is not properly followed	Accidents may occurr	General chemical and hazardous information should be displayed and provide contact no. for possible help. Proper information and training for proper handling chlorine should give all the workers.
1. If chlorine cylinder become corroded	There is a possibility of leakage	Cylinder should be checked in regular interval of time.

Human Errors

After investigation it was observed that the worker was illiterate and he had no knowledge about the hazardous nature of chlorine. The small establishment did not have a telephone for communication. The following human errors are identified,

- **Lack of Knowledge:** Unawareness of the hazards of chlorine.
- **Lack of Logical Thinking:** In any technological situation logical procedures are necessary, but illogical thinking or the behavior lead to accident. Liquid chlorine is leaking from the cylinder

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if the cylinder was titled to facilitate the leak of chlorine gas, then the amount of chlorine leak is minimum. One volume liquid chlorine spreads as 460 volume gas chlorine. But the worker put the leaked cylinder on the ice pot which increased the leak diameter and release liquid chlorine.

- **Mental Inefficiency:** A situation which does not have the mental capacity to deal with the information that must be processed in the activity. The worker is illiterate and his mental capacity is also very limited to process any information in acute conditions.

Accident Prevention and Recommendation as Preventive Measures

There is a need for major precautions while working with chlorine. Arrange safety workshops for safely handling of chlorine cylinders such as movement, appropriate storage facilities and maintenance procedures to be used. Consult the Safety Engineer/supplier's safety officers for safe operational procedures to be followed in an emergency situation stated by Spellman (2003) and Gangopadhyay et al. (2005b, 2007a).

Some general recommendations set up for handling chlorine cylinder, control human error, administrative control and safety work procedure control were followed.

Handling Chlorine Cylinder

Cylinder Movement

The appropriate technique for cylinder movement is the valve cap should be placed and dropping a cylinder or allowing an object to strike the container with extreme force must be prevented. Chlorine cylinders should not expose on heat and never lift a cylinder by its hood. Always use clamp support for cylinder movement. Lifting the cylinder by crane, rope sliding chain or magnetic device should not be use. Lifting the cylinder by holding the valve cap or its neck is prohibited.

Cylinder Storage

The chlorine cylinder storage area is to be a well-ventilated, secured and protected from weather away from heavily congested areas and emergency exits. Never cylinder stored near salted or other corrosive, combustible or flammable materials. Full or empty cylinder should be marked. To prevent full container from being stored for long periods of time use first-in first-out inventory system. Check the cylinders visually at last in every week to detect any indication of leakage or others problems. Provide leak detectors and high concentration audio visual alarm in storage area. To avoid liquid/water ingress in the cylinder while consuming the chlorine, outlet line from cylinder to consumption point should be provided with 32 ft. high barometric leg.

Control of Human Error

1. The workers need proper education and training about the hazards of chlorine.
2. They must have knowledge about the emergency response plan for responding to leaks or accidents.
3. Workers must wear PPE's and breathing apparatus for handling chlorine cylinders or compounds.
4. Follow the manufacturer's instructions during emergency and display the instructions from the material safety data sheet (MSDS).

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5. Do not spray water on damaged or leaking containers; it can make the leak worse.
6. When handling chlorine compounds or cylinders the workers should not eat, drink or use tobacco products.
7. The hands and face should be washed before eating or drinking.

General Control

1. Dragging, rolling or dropping of cylinder should be avoided.
2. Fusible plug safety device on containers should not be tampered.
3. Chlorine supplier is to be immediately contacted if any damage is found.
4. Repair a container or its part like valve should not be done – immediately contact the supplier.
5. In any reason never place a container in hot water, or apply direct heat to increase the flow rate.
6. Once the cylinder has been connected to the process, cylinder is to be opened slowly and carefully.
7. If user experiences any difficulty in operating cylinder valve, disconnect use and contact supplier.
8. When tank valves are in closed do not perform any maintenance work.

Administrative Control

1. Arrange training on safe work procedure to handling chlorine for workers, inform them about the health hazards from exposure to chlorine.
2. Plan an emergency preparedness for handling leak or spills of chlorine cylinders at the work site.
3. Prepare emergency exit plans from the working areas and to move uphill and upwind.
4. Follow the rules for handling or maintaining hazardous materials.
5. Store the cylinders in well ventilated areas and training to the workers is necessary for the operation and maintenance of these systems.
6. In storage area where chlorine used as a raw material, always work with proper cloth and gloves and approved self-contained breathing apparatus in working areas.
7. The ventilation system in the chlorine storage room should be on and functional when workers are in the room.
8. Every plant must have chlorine alarm system of the outside area of the working zone.
9. Clean up chlorine spill as soon as possible and workers must use appropriate protective equipment and clothing.

Conclusion

The incident of chlorine leakage from a baby cylinder and the off-site consequences are described. The analysis of the incident has been carried out with respect to human errors and causes due technical faults. Lack of knowledge among workers about the hazardous nature of chlorine and also some maintenance ignorance on plant safety was the main cause of this incident.

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CASE STUDY 2

Phenol Formaldehyde Runaway Reaction in a Resin Factory

The Incident

One incident occurred in a plant in Kalyani, Nadia District, West Bengal, India. The plant operator started a preparation of a trial process using ammonia catalyst instead of caustic soda under the supervision of an expert. The earlier operation was done by another catalyst caustic soda. When using ammonia catalyst, the plant does not maintain any safe operational procedure and the entire process was started using manual control under expert supervision. The plant stored sufficient amount of phenol formaldehyde and liquid ammonia.

At first 87% phenol in water was taken in the reactor then the 37% concentration of formalin was transferred to the reactor. Then the stirring was started slowly. After that the catalyst liquid ammonia was added manually. During the catalyst addition small quantity of liquid catalyst flashed on the hand of the operator and the operator felt some burning sensation. The temperature of the reaction mass was already raised by steam heating to nearly 100^0 C and after few minutes it was observed that the temperature was increasing abnormally. The supervisor felt some abnormality in the reactor and instructed to drain the reaction mass from the reactor in several 100/200 lit. drums as available in the plant. After filling the drums, the operators closed the lids of some drums and all those were taken away in the open space at a distance from the reaction zone. Till some reactants were kept in the reactor. After a few minutes the closed barrels exploded one after another and some were flying at a height of 30 – 40 ft. and struck the wall and roof of the shed of the nearby areas. The residual mass in the reactor drained to the other empty drums and lids of those drums were not closed and these drums did not explode.

Probable Causes of the Accident

It was observed that there is wrong catalyst used. The liquid which add as a catalyst was not liquid ammonia, but it was concentrated nitric acid. So, there is vigorous reaction occurred inside the reactor. Concentrated nitric acid converts the reaction as a runaway reaction, which increased temperature of the reactor mass. It is observed that abnormal temperature rises in the reactor and there is poor cooling arrangement to control the reactor temperature. So, the expert decided to transfer the reaction mass to 100/200 lit drums and in the few drums the lids were closed and all drums were placed away from the reactor zone. Due to strong reaction at high temperature (as rate of reaction doubled roughly at increase of every 10° C) and evolution of stream, the closed drums experienced high pressure. The high pressure led to the explosion of the drums. The drums without lids did not explode. Draining of the reaction mass saved the reactor. So, it was cleared that the operator added wrong catalyst, concentrated nitric acid instead of liquid ammonia to the process and also at a high rate. Investigation shows that the incident occurred due to human and maintenance error.

The incident analysis shows that operating and maintenance error are primary cause of this incident. The worker used the catalyst from unlabeled jar and which containing wrong chemical compound. Analysis also concluded that though the supervisor had safety knowledge, but the unsafe organizational management process was the leading cause of the accident. Job Hazard Analysis (JHA) and SWOT analysis used to identify the potential hazards in the works place.

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Job Hazard Analysis

Job Hazard Analysis (JHA) is very useful procedure for detecting workplace hazards. It recognizes the possible unsafe working situations before they occur. Chao and Henshaw (2002) stated that the method used for identifying, evaluating and controlling risks in industrial procedures. It also identifies the connection between the operator, the working procedure, methods or tools and the work environment. JHA identified the proper job procedure after carefully studying and recording each step of the job, then identifying the existing or potential job hazards, safety and health to determine the best way to perform the job to reduce or completely eliminate the hazards potential. According to Holt, (2001) Job Hazard Analysis is a safest planning procedure of a work. The advantages this analysis is to

1. It prevents worker injuries and illnesses and enhance organizational health and safety of workers
2. It identifies more effectual safe work procedures
3. Increase plant production
4. Prevent harmful situation
5. Reduce workers compensation costs
6. It is a precious technique for safety training of new employees.

To avoid maintenance error the management of a plant must give a practical explanation to the worker on health and safety, working procedures such as how skillfully use of machines and perform other working procedures by taking the corrective measures as identified by JHA. JHA gain trust and reliability of the workers even under harmful situation stated by U.S. Department of Labor, OSHA (2002). According to Chao and Henshaw (2002) the JHA conducted in to three main steps as

1. **Identification:** Selecting a particular job, then divided into different sequence stages and identify probable accidental/ unsafe situation of working procedures.
2. **Assessment:** Assess the possible hazards situation may be occur during the work.
3. **Action:** Evaluate to decrease the risk.

Friend and Kohn (2003) and Ramsay et al. (2006) describe that JHA also define job procedures in a proper way and step by step that workers and trainers both can completely understand the working procedures and also gain knowledge about unsafe working procedures and follow the proper method of the job.

SWOT Analysis

The SWOT analysis (Strengths, Weakness, Opportunities and Threats) is a valuable and helpful method which recognize strengths, weaknesses and also to examine the opportunities and threats of an industry. Strength and weakness analysis focuses on the previous work procedures, existing strength, resources and capabilities. The opportunity analyses pay attention to the improvement of working procedures and working conditions. Threats indicate the barriers or difficulty of job procedures which influence the production.

The SWOT method is used to recognize a solution of a problem or establish a plan of work which evaluates the strengths and weakness within organization and the opportunities and threats outside the organization. The internal and external factors indicate the positive points, strengths and opportunities

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and negative points, weakness and threats of the organization. It recognizes the clear idea about the job and the working environment to the management and workers. Hence it decreases the accident/near misses situations and also raising safety awareness.

Job Hazard Analysis (JHA) and SWOT analysis has been carried out to investigate the accident. Table 4 shows the basic step of JHA which represents the all possible factors of the incidents. It explains step by step the incident in a simple way. JHA indicates that operating error and maintenance error were the main causes of this incident. The maintenance error occurred due to management ignorance because the catalyst jar was not labeled so, the worker added wrong catalyst. This analysis also suggests the preventive measures shown in Table 4. Table 5 shows SWOT analysis which represents the strengths, weaknesses, opportunities and threats of this manufacturing plant which identified the reasons of this accident and also finds out the solution which prevent this type of accident in future. This analysis concluded that the supervisor of the plant had knowledge and experience about the process but faulty management was the main cause for accident.

Table 4. Job Hazard Analysis

Basic Job Steps	Potential Hazards or Injuries	Cause	Required Safe Job Procedures
This process based on ammonia catalyst	Wrong catalysts causes the reaction to run out of control	Wrong catalyst, a concentration of nitric acid used	Proper catalyst should have been added.
Adequate cooling arrangement should be provided	Inadequate cooling increases temperature	The reaction rate is doubled approximate increase of 10°C and also evaluation of water vapor a reaction product is large amount	Adequate vent arrangement (proper sized vent) in the extreme condition should be provided, otherwise there was possibility of explosion due to over pressure, it causes complete destruction of the reactor vessel and possibilities of flying of metal pieces in an around the plant which is dangerous for the human in-site and out-site and also release of hazardous materials
In store material should keep in proper order, display MSDS in working areas, check delivery order etc. are required to avoid mixing the wrong chemical in the process	Proper reactants or catalyst should be identified and used for the reaction and also use in proper sequence	Wrong reactants or catalysts or wrong sequences in the input to the reactor can also lead the reaction runaway	Chemical should be labeled and the use of Personal Protective Equipment (PPE) for carrying the chemicals
The runaway reaction exothermic in nature; therefore, increases temperature, so the reaction mass transferred or draining away from the reactor zone in case of emergency	The reaction mass transferred in a container close lid conditions leads to the explosion of the container	Create high temperature (as rate of reaction doubled roughly at increases of every 10°C) inside the container and also release of steam – pressure rises	Always transferred the reaction mass in a container in open lid condition which does not creates high pressure inside the container
Any kind of operating negligence occurred	Accident, blast, explosion occurred	Reaction is very exothermic, so any negligence can lead to the accidental situation	Implement various protective measures; arrange operator training, gain knowledge about chemical reactions, showing them past accident histories

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Table 5. SWOT analysis

	Positive	Negative
Internal	**STRENGTHS** 1. Standard process 2. Experience in the process technologies by the engineers, also the knowledge and experience in runaway reaction 3. Due to sufficient knowledge and experience dangerous situation is avoided, otherwise reactor may burst, create more adverse situation 4. Management is committed for the new product using ammonia as catalyst	**WEAKNESSES** 1. The chemicals are not labeled in the storage 2. Inadequate knowledge of the workers 3. Faulty management system 4. Management is not confident enough in the new process 5. No emergency planning for in-site and off-site 6. Lower levels staff are mostly illiterate not much knowledge of the process due to lack of training 7. Lack of communication skill of the workers 8. Lack of knowledge of the released chemicals and their amounts in the accident scenario
External	**OPPORTUNITIES** 1. Proper training – to impart knowledge about the process and the runaway condition of the process 2. Showing MSDS of the chemicals in the proper place 3. Adequate cooling arrangement in the reactor 4. Chemicals should be added in the reactor in proper sequence 5. Proper storage facilities 6. Separate racks for separate chemicals in the storage with proper labeling 7. Profit margin is going up due to high market demand particularly in locality and also export market	**THREATS** 1. Uncontrolled exothermic runaway reaction 2. Human error/maintenance error 3. Accident or explosion 4. Loss of life and productivity

Remedial Measures

All the chemical reactants should be kept in proper storage area with proper identification. The reactants are to be added standard measured quantity and maintaining a precise sequence as prescribed in the operating manual.

Lessons Learnt

1. Job Hazard Analysis and SWOT analysis conducted to analyze the incident. Both analyses recommend the following preventive measures
   a. For identifying the chemicals are labeled in the storage area.
   b. Chemicals should be stored in properly arranged manner.
   c. Chemicals should be added in the reactor in proper sequence.
   d. To avoid runaway reaction adequate cooling arrangement is to be provided to the reactor.
   e. Material Safety Data Sheet (MSDS) should be display in the working zone.
   f. Use Personal Protective Equipment (PPE) while carrying the chemicals.
   g. Safety training programme for the worker should be arranged at regular interval of time, at least once in a year to avoid operating error.
2. Administrative controls
   a. Management is to be prepared the SOPs (Standard Operating Procedures) of the process.
   b. Emergency preparedness programmes are to be prepared for onsite and offsite.
   c. SOPs are to be followed.

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3. Proper sized emergency relief valve must be provided in the reactor.
4. Past accidental case studies give appropriate guidelines on how to control accidents in future. The workers also learnt safety lessons from it.

Steps to be Taken to Reduce Hazards

1. SOPs (Standard Operating Procedures) for the new ammonia catalyzed process are to be developed to improve the inherent process safety.
2. Implementation of various protective measures like temperature control, instrumentation and interlocks to eliminate the opportunities for minimize the human errors.
3. The operators must be understood the hazardous information about the chemical and the process hazards and the consequences are to be evaluated for the process hazards assessment.
4. Operators should be followed SOPs.
5. To prevent this type of incident in future, identify the root causes and lessons learnt and all recommendations are to be incorporated to prevent recurrence.
6. Management should arrange training programme for the operators at regular interval of time to improve workplace safety.

Conclusion

An accidental case study in the process of manufacturing of phenol-formaldehyde resin has been reported using ammonia as catalyst in the new trial run process. Operator and management ignorance allowed for concentrated nitric acid added to the reactor instead of ammonia and a runaway reaction was started. The probable causes and remedies discussed on the basis of The Job Hazard Analysis (JHA) and SWOT analysis.

CASE STUDY 3

Carbide Fire in an Acetylene Gas Plant

The Incident

The incident took place in an industrial gas plant in West Bengal, India in one night of March 1993. The shift officer was on routine visit in the plant at around 11p.m. It was a summer night and there was heavy downpour around for two hours from 8 to 10 p.m. There was water logging in the factory roads due to rains. The shift officer was on round by company car after the rain stopped. While passing beside the calcium carbide godown, heavy smoke was seen issuing from the entrance of the main godown. The officer then stopped the car on road and observed that smoke was issuing from a carbide drum. The drum was kept on floor outside the godown beside the covered walkway approaching acetylene gas generator room. No flame was found to come out of the drum. The drum lid was in open condition. The fire was extinguished by fire extinguisher immediately. There was no loss of life and no loss of property.

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Process of Fire in the Plant

Water ingress to the carbide drum occurred during rain. Thus, a typical carbide fire occurred as soon as carbide came in contact with water followed by formation of acetylene gas as result of temperature raised to the flash point of acetylene and there was auto ignition of acetylene.

Probable Causes of the Incident

1. Carbide drum with dust and lump was kept for long time for necessary disposal
2. Carbide dust was partially exposed to atmospheric air
3. There was water ingress into exposed drum
4. Formation of acetylene in the drum
5. Auto ignition of acetylene inside the drum due to rise of temperature in drum
6. Safe procedure was not followed for disposal of carbide dust and lump
7. Strict supervision was lacking

Errors and the Accident Analysis

What-if analysis used to identify the possible errors, and the unsafe activities. The human error, unsafe act committed by the system operator which led to the accident. This unsafe act either involve doing something wrong or failing to do something. Table 6 shows what-if analysis. It reveals that the accident occurred due to maintenance and operating error. The maintenance failure is also a major cause of human errors. The management of the gas plant does not maintain the maintenance procedure of the carbide storage and the plant operators had insufficient knowledge as,

1. The carbide drum which was necessary for disposal was kept for long time outside the go down on floor beside the walkway approaching acetylene gas generator room.
2. The lid of the drum was also in open condition.
3. The maintenance of the roof of walkway was very poor, so the water ingress to the carbide drums during rain due to spillage of rainwater in the drum.

Thus, the plant was running poor supervision. Although there was no loss of life and no loss of property, but a big incident could occur.

Lessons learnt

1. Calcium carbide dust, sweeping, calcium carbide lump etc. should be disposed as soon as possible
2. Carbide dust, lump, etc., be stored at dry place before disposal
3. Care must be taken for supervision of carbide handling and storage
4. Refresher training programme to be in place in close frequency for all concerned
5. Encourage good performance in maintenance work
6. Good communications in maintenance team, working conditions (enough light, not very hot or not very cold, well ventilated clean storage area) are maintained by the management.

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Table 6. What-if analysis

What - if questions	Consequences	Recommendations
Are calcium carbide drums in contact with moisture?	Acetylene formations occur	Use local exhaust ventilation or workers should worn respirators and personal protective equipment (PPE).
If acetylene gas mixes with air?	Explosions occur	Establish an emergency response plan for responding in accidental situation.
If workers are illiterate or if operating procedures are not properly followed?	Accidents may occur	General chemical and hazardous information should be displayed to the workers and train them for proper handling calcium carbide.
If the calcium carbide rules, 1987 are not properly maintain?	Typical carbide fires occur	Follow the Calcium carbide Rules, 1987.
If acetylene gas spreads off-site?	Severely irritate and burn the eyes, skin, mouth, throat and shortness of breath	On skin contact immediately wash or shower to remove the chemical, use P.P.E and goggles.
If acetylene fire breaks down?	Explosion occurred	Establish an emergency response plan for responding in accidental situation and use explosion proof electrical equipment and fittings.

Corrective Action

1. Training was conducted for all concerned responsible for acetylene plant operation, in regular interval of time
2. Intense care was taken for carbide dust and lump disposal in the regular frequency
3. Storing carbide outside carbide godown was bad practice, management should strictly follow the Calcium Carbide Rules, 1987, Chapter V for storage (Ministry of Industry, India).

Disaster Management

All the fire in acetylene plant hazards can lead to disaster within a short while in acetylene plant due to inflammable nature of acetylene. The acetylene plant must have a disaster management plan to meet emergency situation. A very short resume of disaster management plan is cited here. The salient features of the plan are as usual the following basic steps of a standard hazard management plan. They are as under,

1. Hazard identification, Safety audit, etc.
2. Hazard analysis / evaluation, HAZOP (Hazard and Operability Study) study, etc.
3. Mitigation of hazard.
4. Prepare emergency plan for working areas inside or outside of the plant.
5. Save workers from the worse situation and shift the entire staff form accidental zone.
6. Provide safety information about the plant operations.
7. Roles and responsibilities of managerial and worker.
8. Testing the plan.

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Recommendations

1. Management must take the responsibility to train their personnel to be sure that they understand the hazards while handling flammable materials and training should be carried out in regular interval.
2. Carbide must always be stored and handled at dry and moisture free condition, as per calcium carbide rules, 1987.
3. Carbide must be used in the process on FIFO (First in First Out) principle.
4. Handle carbide/dust only with spark proof shovels. Disposal of carbide dust must be done in the open with copious supply of water as soon as possible.
5. System must be in place for periodic audit of operation and safety procedure of the plant by internal and external audit team.
6. At no condition acetylene release, leakage, etc., can be allowed in an acetylene producing plants. All leaks to be identified and stopped with immediate effect. No delay is permissible.
7. All maintenance jobs must be done with best care and under permit of work procedure.
8. All operating staff must use Personnel Protective Equipments (PPE's), e.g., air stream helmet, cotton suits, fireproof hand gloves, safety shoes while charging carbide to acetylene generator and other jobs to be performed with the recommended PPE's.
9. The alarm system should be provided in different work area to operate the plant safety.
10. All do's & don'ts must be displayed at the entrance and also important areas of the plant.
11. To detect human failure conduct HAZOP study and draw a plan for emergency disaster management.
12. The management is to manage available tools/equipment, reduce interruptions and distractions, housekeeping and tool control, manage fatigue-work schedules, manage boredom- by task assignment, appropriate rules procedures, reduce action slips, reduce memory lapses, improves task completion, improve attention and memory, reduces complacency and overconfidence, reduce risky decision making.

CONCLUSION

The analysis of the incident has been carried out with respect to human errors. The carbide drum was for disposal kept for long time outside the go down and water ingress into the drum due to rain. The management of the gas plant does not maintain safety rules. In future to prevent this type of incident must follow the suggestive and corrective actions and recommendations.

DISCUSSION

Chemical industrial accidents include fires, explosions, and leakages of toxic or hazardous materials are harmful for people and environment. The causes of accidents are poor design, inadequate maintenance, human error etc. The chapter discussed about human factors is one of the major causes for accidents. Human factors occurred due to lack of knowledge, lack of motivation, lack of attention, lack of perception, carelessness/negligence, lack of memory etc. So, operating error, maintenance error, inspection error, attention error, identification error, interpretation error etc. occur as human error. Three accidental case

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studies also find the probable human factors behind the incidents. Engineering students, safety personnel, workers and all other persons related with plant safety also benefited from this chapter.

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KEY TERMS AND DEFINITIONS

Accident: An unfortunate event which is unexpected, unavoidable, unintended and damage property and life is called accident.

Analysis: A systematic examination and evaluation of data or information, by breaking it into its component parts to uncover their interrelationships.

Chemical Industry: Chemical industry is one of important and biggest industrial sector which produce chemicals in a complex manufacturing process.

Errors: The primary meaning of error is mistake. Sometimes error defined as incorrect or wrong procedures.

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Hazards: Any harmful component that can cause harm or damage to human, property or the environment.

Incident: An unpleasant or unusual event which make situations accidental.

Occupational Safety: Concerns with physical and psychological conditions of workers and employers in workplaces which primary focus on preventing hazards, risk factors, diseases, stress related disorders etc.

Process Safety: It means preventions from all accidental possibilities or situations in industries and also preventing unintentional releases of hazardous materials which can have a serious effect to the plant and environment.

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Chapter 75
Occupational Health and Safety Hazards in Agriculture:
A Study on the Risks Involved for the Sustainability

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ABSTRACT

Within the agricultural sector, it becomes essential worldwide to analyze the magnitude of OHS problems. However, there is a lack of study in Odisha (India) to assess the prevailing situations. Hence, an attempt was made in this study to explore the issues related to OHS among the farmers of Odisha in India. There is a dual main contribution in this study. At first the occupational health and safety issues of farmers of Odisha in India were analyzed based on the literature review and the data collected by personal interaction and questionnaires. In the second part, the step-wise weight assessment ratio analysis (SWARA) method was used to rank the different farming processes, as well as different risks involved in various farming activities.

INTRODUCTION

Occupational health and safety (OHS) has been a major concern worldwide spreading from industrial to agriculture sectors. A variety of hazards having undesirable consequences are associated in farming like infection by pathogens, injuries from exposure, physiological disorders, poisoning, respiratory infections, and musculoskeletal disorders, etc. In terms of injuries and work related illness, agriculture has been ranked among the top three most hazardous occupational groups by the Centers for Disease

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Control and Prevention (CDC, 2013). Thus, the well being of farmers as well as the sustainability of agricultural sectors can be ensured by emphasizing on OHS issues within this sector (Jugmohan, 2013). It has been highlighted for the necessity of improving the existing laws, based on a study made from cases in Gujarat (India) to explore the ethical challenges in OHS (Patel et al., 2016). The agricultural system is governed by accumulated knowledge, technology, integrated value chains, institutional innovations (Byerlee et al., 2009), globalization (Von Braun et al., 2008) and physical, biological and cultural environment (Vasey, 2002). However, agriculture greatly affects the ecosystem by clearing of lands, fragmentation of habitats, variation in ecosystem, desertification, erosion of soil, loss of biodiversity, and eutrophication (Conway & Barbier, 2013; Fan et al., 2012; Rosset et al., 2000). The ecosystems are polluted (Conway & Pretty, 2013; Diaz & Rosenberg, 2008) and human health is affected (WHO, 1996) by the use of agrochemicals like pesticides and fertilizers. Most of the agricultural tools and equipments are made locally with the available materials such as woods, iron and stones (Karthikeyan et al., 2009). As these locally made tools lacks the ergonomic aspects in its design, so it results in more drudgery and work related accidents or injuries. It has been suggested to conceptualize the association between unsafe employment and occupational health (Quinlan et al., 2001).

There is a lack of organizational framework in the agricultural sectors needed for OHS management techniques to operate effectively. Thus within agricultural sector, it becomes essential worldwide to analyze the magnitude of OHS problems. However, there is a lack of study in Odisha (India) to assess the prevailing situations. Moreover, most of the farmers are unaware of the potential risks in their jobs and there are no educational extension programs addressing these issues. Hence an attempt was made in this study to explore the issues related to OHS among the farmers of Odisha in India. The findings in this study may have positive implications for extension programs and policy formulation in the sustainability of agricultural sectors.

BACKGROUND

The agricultural hazards are as a result of exposures to agrochemicals, psycho-social stresses, poor ergonomics, and poor physical working conditions (White et al., 1989). The use of chemicals in modern farming has become an essential element exposing farmers in direct contact to agro-chemicals, flowing of agro-chemicals in unprocessed areas, and residual contact of equipments and processed crops (Strong et al., 2008). Because of the lacking of personal washing facilities on the farm, the farmers are supposed to expose their families to agro-chemicals by taking their contaminated clothes to home (Quandt et al., 2010). Some of the instant or short term diseases on human health due to pesticide exposures are headaches, respiratory problems, coma, disorientation, rashes, vomiting & nausea, and shocks. Whereas, cancer, reproductive, and neurological problems are also caused as long term diseases (Arcury et al., 2002; Das et al., 2001; ILO, 1986). Heavy physical workloads and poor ergonomic working conditions, results in injuries and musculoskeletal disorders (Giuffrida et al., 2001). Neck, shoulder and back pain were most commonly observed in Ireland (Osborne et al., 2012). The performance of work and the associated work setting attributes greatly to the work related musculoskeletal disorders (Collins et al., 2011; Punnett et al., 2004). Kumar et al. (2013) have revealed the seriousness of work related musculoskeletal disorders and reported that the musculoskeletal disorders were because of prolonged exposure to loads having variable work intensities. A total of 36 agricultural injuries were reported during a year considering twelve villages of Punjab in India. Moreover, the injuries rate per thousand machines per

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year for tractors, sprayers, electric motors, threshers, and fodder cutters was 23.7, 15.5, 7.1, 5.7, and 2.2, respectively (Mittal et al., 1996). DeMuri et al. (2000) have highlighted that the injuries in agricultural sectors are as a result of lacking in proper supervisions, unreasonable expectations, economic troubles, and improper safety devices. Xiang et al. (2000) have conducted the face to face interview of 1358 Chinese farmers out of 1500 farmers considering 14 villages to evaluate the agricultural related injuries. A higher fatality rate and the injuries rate of 0.22, and 5 to 166 per 1000 workers per year were revealed in an agricultural survey in USA (Rautiainen et al., 2002). The agricultural accident rate was reported as 1.25 per thousand workers per year in Madhya Pradesh (India). It was further found that 77.6% of accidents were due to farm machineries, while 11.8% by the use of hand tools, and rest due to other reasons (Tiwari et al., 2002). As compared to the industrial workers, the injuries of farmers were reported to be higher (Helkamp et al., 2002). Kumar et al. (2008) have reported a total of 576 agricultural related injuries with hand tool related as 332 i.e. 58%, considering nine villages with 19,723 persons in 1st phase of their study. Additionally, in 2nd phase of study by considering more 21 villages with 78,890 persons 54 i.e.19% of hand tool related injuries out of 282 injuries was reported. It was further recommended to have intervention training and development activities at block levels for the safety measures of tools & equipments. In an investigation for the agricultural accidents between years 2000-2005, of 42 villages in Arunachal Pradesh (India) the accident rate was reported as 6.39 per thousand workers per year having farm implement related injury of 40% (Kumar et al., 2009). The workers and farmers engaged in livestock like dairy farms are subjected to adverse health risks (Karttunen et al., 2013). A total of 576 injuries in the agricultural sectors of Haryana in India were reported for 9 villages in a year. The injuries reported as minor were 87%, 11% as moderate and left over as severe. Most of the injuries were revealed of occurring because of hand tools like spades and sickles, bullock carts, manually and power operated fodder cutters, diesel engines and tractors (Mohan et al., 1992). By considering a total of 1000 farmers in Alabama limbs were found to be the most injured body part in agricultural accidents (Zhou et al., 1994). Giuffrida et al. (2001) have reported the adverse health effects on farmers by physical hazards due to noise, heat, vibrations, and other harmful climatic conditions. The psycho-social hazard to farmers occurs due to occupational stress and depressions. The study about the occupational stresses among farmers in India revealed that farming occupation causes high level of stresses, since farmers and their families work under the most stressful conditions such as financial problems, time pressures, diseases, government policies, heavy workloads, and unpredictable weather conditions (Ramesh et al., 2009). Effective interventions for reducing MSDs are the psychosocial and socio-cultural aspects of the work environment (Fathallah, 2010). Slips, trips, and falls on farms while performing agricultural activities were reported as the most important reasons of work related injuries among farmers (ACC, 2002). Moreover, the presence of wet, slippery, and muddy surfaces are the primary causes of slips, trips, and falls. A study in the Swedish agricultural industry revealed that injuries such as cuts, dislocations, and broken bones occur mainly from slips, trips, and falls. Furthermore, some injuries may result in permanent disability and can even be more serious & deadly (Lundqvist et al., 2012). There has been an increased food and fiber production leading to profits in agriculture with the use of pesticides. However, the use of pesticides is associated with the death of farm animals, human health risks, and in the alteration of local environment (Tchounwou et al., 2002; Calvert et al., 2001). The lower level exposures to one pesticide are greatly influenced by the associated exposure to other pesticides and to air, water, food and drugs pollutants (Akter et al., 2009). New tools or techniques having larger reliability than the existing are required to reduce the adverse effects pesticides on human health as well as the environment. Additionally, the alternative implementation of cropping systems with

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less dependency on pesticides, developing new pesticides with novel action modes and enhanced safety profiles, and the improvement of already used pesticide formulations towards safer formulations could reduce the adverse effects of farming. Besides, the use of well-maintained and appropriate spraying equipment considering all precautions that are required in all stages of pesticide handling could minimize human exposure to pesticides as well as the potential adverse effects on the environment (Damalas et al., 2011). Farmers in remote agricultural areas are more affected by pesticide illness and poisoning, as these areas have inadequate occupational standards for safety, insufficient pesticide-related legislation enforcement, pesticide containers with poor labeling, illiteracy, inadequate protective clothing and washing facilities as well as lack of knowledge of hazards due to pesticides (Tchounwou et al., 2002; Snelder et al., 2008). Nag et al. (2004) have reported of the tractor related incidents such as overturning, falling from tractors, etc. as highest which was followed by the accidents due to threshers, sprayers, crushers, and chaff cutters. Further it was found that most of the fatal accidents were because of the use of the powered machineries. A major source of mortality and morbidity among workers are associated with occupational hazards (Driscoll et al., 2005). Animal workers in their daily practice have been reported to be exposed to various hazardous situations (Adedeji et al., 2011; Olowogbon, 2011). The awkward working postures, high rate of work, and deficiencies in the design of hand tools used in farm activities result in cumulative musculoskeletal strain and injuries (Vyas, 2014). The proportions of health problems are not the same for both men and women. Usually long static postures adopted by them for some of the activities increases the physiological costs as well as lower the productivity (Tripathi et al., 2013; Tripathi et al., 2015). Various types of physical hazards were reported among the farm workers engaged in dairy, poultry, piggery, husbandry and dealing with animals in a variety of agricultural activities (Driscoll et al., 2005; Stallones, 2011; Ghosh et al., 2014). Moreover the physical hazards occur due to slippery floors, dung pits, cages, and dusty feeding areas around the cattle, goat and sheep production units (Myers et al., 1997). A majority of workers in Nigeria, associated with livestock rearing were reported to be unaware of various preventive measures about work related risks and hazards. The prevalence of occupational hazards exposure was revealed as 69.6%, with hospitalization cases related to work of 6.5%, and occupational related sickness & diseases of 14.3% (Awosile et al., 2013). Over 5% of rural occupants were reported of suffering from ringworm infections. Moreover the chemical hazards were reported by both male and female respondents with a significant difference in its extent. It was found that the chemical hazards were due to use of chemicals in disinfection, decontamination, cleaning of animals (Chatterjee et al., 1980). Female farmers were reported to be more vulnerable to psychological hazards when compared to the male farmers (Malmberg et al., 1997; Melberg, 2003). A majority of workers in Nigeria, associated with livestock rearing were reported to be unaware of various preventive measures about work related risks and hazards (Awosile et al., 2013). The respondents taking the risk and perceiving the farm related injuries as inevitable were reported to have multiple injuries than those practicing safe farming such as operating machinery safely, and wearing of protective clothes (Harrell, 1995). Chikerema et al. (2013) have reported in a study in Zimbabwe, that less than half of the workers were aware of various preventive measures against work related diseases. The percentages of workers found of aware about the use of protective clothing, washing of hands after work periods, and good sanitary practices were 23.5%, 6.5%, and 7%, respectively. With the objective to guard animals, the farmers usually live with them under the same roof. This in turn increases the probability of exposing to zoonotic diseases having bacterial origin, like internal parasites such as tapeworms and ectoparasites such as fleas & mites (Nasinyama et al., 2000). In a study carried out in Odisha (India), it was observed that out of a total of 45 farmers, 43 farmers were victims of farm related accidents due to the use of hand tools (Mishra

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et al., 2018a). Dube et al. (2018) have made an ergonomic assessment for different postures of farmers of Odisha in India during seeding, fertilizing and weeding processes in agricultural field, and based on the obtained RULA scores, different action levels were suggested for the existing working techniques and methods. Mishra et al. (2018b) have studied the musculoskeletal disorders during threshing of crops for farmers in Odisha, and suggested to prefer ergonomic design of farming tools.

There is a dual main contribution in this study. At first the occupational health and safety issues of farmers of Odisha in India, were analyzed based on the literature review and the data collected by personal interaction and questionnaires. Based on the recommendations of different studies where the SWARA methods are used not only to determine the weight of criteria, but also to completely solve MCDM problems, in the second part the "Step-wise Weight Assessment Ratio Analysis (SWARA)" method was used to rank the different farming processes, as well as different risks involved in various farming activities.

Step-Wise Weight Assessment Ratio Analysis (SWARA) Method

The SWARA (Step-wise Weight Assessment Ratio Analysis) method developed by Kersuliene et al. (2010) is one of the methods used for determining weight values in a decision-making process. Alimardani et al. (2013) have used SWARA and VIKOR analysis as two multiple attribute decision-making (MADM) methods for agile supplier selection based on four criteria including performance, cost, flexibility and technology. SWARA was used for determining the importance of each criterion and calculating their relative weights, while VIKOR was used for evaluating and ranking from the best to the worst of the supplier alternatives. Zolfani et al. (2014) have used SWARA and COPRAS as two MCDM methods on decision and policy making of high tech industries in Iran. Finally they have concluded with Nanotechnology at the top priority in Iran and also recommended this methodology for other areas of research. An extended version of stepwise weight assessment ratio analysis (SWARA) was proposed for criteria evaluation in decision making. As SWARA analysis involves two important steps where the first is prioritization of the criteria by experts, and the second is the calculation of relative weights. The reliability evaluation of experts' idea into the first step of SWARA analysis was recommended to improve the quality of the decision-making process (Zolfani et al., 2018). The integration of the delphi technique and the adapted SWARA method was successfully applied for creating a set of evaluation criteria for the sales managers and for defining the relative weights of such criteria (Karabasevic et al., 2017). There are few approaches that are based on the idea of SWARA method and also SWARA extensions, such as: selecting of personnel with the use of the adapted weighted sum method based on the decision-makers preferred level of performances (WS PLP), and the SWARA Method (Stanujkic et al., 2017).

Based on Kersuliene et al. (2010) and Stanujkic et al. (2015), in this method the opinion of experts on the significance of criteria involved in a decision making process are obtained to form the list of criteria.

Then the below steps are followed.

Step 1: Criteria are sorted according to their significance.

In this step, the experts perform the ranking of defined criteria according to the significance. The most significant is placed in the first place, while the least significant is placed in the last place.

Step 2: Comparative importance of average values (s_j) are determined.

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In this step, starting from the second ranked criterion, the significance values are determined i.e. how much the criterion c_j is more important than the criterion c_{j+1}.

Step 3: The coefficients (k_j) are calculated as follows:

$$k_j = \begin{cases} 1, j = 1 \\ s_j + 1, j > 1 \end{cases} \quad (1)$$

Step 4: The recalculated weights (q_j) are determined as follows:

$$q_j = \begin{cases} 1, j = 1 \\ \frac{q_{j-1}}{k_j}, j > 1 \end{cases} \quad (2)$$

Step 5: The relative weights (w_j) of the evaluation criteria are determined as follows:

$$w_j = \frac{q_j}{\sum_{k=1}^{n} q_k} \quad (3)$$

where, n denotes the number of the criteria.

Research Methodology

This research was based on the detailed review of literature was carried out in this study related to the agricultural OHS issues and then identification of the risks associated with different farming activities in the agricultural sector of Odisha (India) was done. The identification of the farming risks and the subsequent ranking on the basis of their importance was done on the basis of the literature review, personal interaction with farmers during different farming activities, and opinion of decision making experts. The SWARA method was used in the study to calculate the weights and corresponding ranking of the criterion and sub-criteria. The characteristics of the decision-making experts are as shown in Table 1. The criteria's and sub-criteria are based on the risks associated with different farming activities, which were identified from the literature review is as shown in Table 2.

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Table 1. The characteristics of the decision-making experts

Field	Gender		Education Level		
	Male	Female	Bachelor	Master	Doctor
Agriculture	2	0	0	1	1
Health and Medicine	0	1	0	1	0
Environmental	1	0	0	0	1
Fishery	1	0	0	1	0
Industrial engineering	1	2	0	1	2

Table 2. Criteria and sub-criteria based on categories of the agricultural sector

Symbols	Criteria and Sub-Criteria
C_1	**Land preparation process**
C_{1-1}	Irritation from smoke during burning rice stalks, if any.
C_{1-2}	Musculoskeletal problems from lifting and carrying tools or equipments.
C_{1-3}	Injuries from hand start of plowing and harrowing machines.
C_{1-4}	Exposure to diesel fumes from plowing and harrowing tractors.
C_{1-5}	Exposure to loud noise from plowing and harrowing tractors.
C_{1-6}	Injuries from plowing and harrowing blades.
C_{1-7}	Exposure to vibration of plowing and harrowing machines.
C_{1-8}	Injuries during operation of plowing and harrowing tractors.
C_{1-9}	Injuries from stepping on shell.
C_{1-10}	Musculoskeletal problems from carrying heavy pumping hoses or pipes.
C_{1-11}	Musculoskeletal problems from incorrect working postures.
C_2	**Seed soaking and scattering/Fertilizer applying process**
C_{2-1}	Musculoskeletal problems from carrying heavy containers.
C_{2-2}	Puncture from bamboo sticks of seed containers.
C_{2-3}	Exposure to wet and humid soil.
C_3	**Pesticides mixing and spraying process**
C_{3-1}	Exposure to loud noise of pesticide applying machines.
C_{3-2}	Exposure to vibration of pesticide applying machines.
C_{3-3}	Injuries from falling of pesticide applying machines.
C_{3-4}	Musculoskeletal problems from carrying pesticides sprayers.
C_{3-5}	Symptoms from pesticide exposures, such as vomiting, skin irritations, nasal irritations, eye irritations, and headache.
C_4	**Weed pulling process**
C_{4-1}	Musculoskeletal problems from incorrect weeding postures.
C_{4-2}	Musculoskeletal problems from weeding by hand.
C_{4-3}	Musculoskeletal problems from weeding by machine.
C_5	**Rice harvesting process**

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Table 2. Continued

Symbols	Criteria and Sub-Criteria
C_{5-1}	Injuries from manually operated harvester.
C_{5-2}	Exposure to vibration of harvesting machines.
C_{5-3}	Exposure to noise of harvesting machines.
C_{5-4}	Injuries while operating harvesting tractors.
C_{5-5}	Musculoskeletal problems from incorrect postures in harvesting.
C_{5-6}	Musculoskeletal problems from lifting heavy rice stacks.
C_6	**Threshing process**
C_{6-1}	Injuries from manually operated thresher by striking on wooden frame or using hand operated mechanical thresher or using draft animal driven thresher.
C_{6-2}	Exposure to vibration of threshing machines.
C_{6-3}	Exposure to noise of threshing machines.
C_{6-4}	Musculoskeletal problems from incorrect postures in threshing.
C_{6-5}	Exposure to grain dusts.

Results and Discussion

The most important criteria for this study as illustrated in Table 2 are land preparation process, seed soaking and scattering/fertilizer applying process, pesticides mixing and spraying process, weed pulling process, rice harvesting process, and threshing process, respectively. The sub-criteria's are the risks involved in different farming activities as illustrated in Table 2. The weights criteria and sub-criteria are calculated by using SWARA method as shown in Table 3-Table 9. The criteria's and sub-criteria's have been arranged according to the priorities defined by experts. The final ranking of criteria's and sub-criteria's are obtained considering their respective calculated weights (Table 10). Final weights of sub-criteria based on agricultural farming related risk in context of different criteria such as land preparation process, seed soaking and scattering/fertilizer applying process, pesticides mixing and spraying process, weed pulling process, rice harvesting process, and threshing process, are shown in Table 4-Table 9. It may be noted that the final weights of sub-criteria's are based on the respective weights of criteria's. The assessment scale is based on 5 percent steps. i.e., experts indicated a comparative and value differences on the basis of 5 percent increments: 5%, 10%, 15% and so on. Final numbers in this part are calculated from the arithmetic average of experts' ideas.

From the overall ranking of all five criterions, land preparation process ranked the first, followed by rice harvesting process, threshing process, weed pulling process, seed soaking and scattering/fertilizer applying process, and pesticides mixing and spraying process at the last rank, respectively. While considering the ranking of sub-criteria only, it was found that musculoskeletal problems from incorrect weeding postures in the criteria of weed pulling process ranked first, while musculoskeletal problems from incorrect working postures in the criteria of land preparation process ranked the last as illustrated in Table 10.

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Table 3. Final weights of Criteria's

Criteria	Comparative Importance of Average Value (s_j)	Coefficient ($k_j=s_j+1$)	Recalculated Weight $\left(w_j=\frac{x_{j-1}}{k_j}\right)$	Weight $\left(q_j=\frac{w_j}{\sum w_j}\right)$
C_1		1	1	0.228
C_5	0.15	1.15	0.869	0.198
C_6	0.16	1.16	0.749	0.171
C_4	0.13	1.13	0.663	0.151
C_2	0.14	1.14	0.582	0.133
C_3	0.14	1.14	0.510	0.116

Table 4. Final weights of sub-criteria in context with land preparation process

Sub-Criteria	Comparative Importance of Average Value (s_j)	Coefficient ($k_j=s_j+1$)	Recalculated Weight $\left(w_j=\frac{x_{j-1}}{k_j}\right)$	Weight $\left(q_j=\frac{w_j}{\sum w_j}\right)$	Final Weights
C_{1-1}		1	1	0.170	0.038
C_{1-2}	0.19	1.19	0.840	0.143	0.032
C_{1-4}	0.17	1.17	0.718	0.122	0.027
C_{1-3}	0.15	1.15	0.624	0.106	0.024
C_{1-5}	0.14	1.14	0.547	0.093	0.021
C_{1-6}	0.12	1.12	0.488	0.083	0.018
C_{1-7}	0.12	1.12	0.436	0.074	0.016
C_{1-9}	0.19	1.19	0.366	0.062	0.014
C_{1-10}	0.18	1.18	0.310	0.053	0.012
C_{1-8}	0.11	1.11	0.279	0.047	0.010
C_{1-11}	0.16	1.16	0.241	0.041	0.009

Table 5. Final weights of sub-criteria in context with seed soaking and scattering/fertilizer applying process

Sub-Criteria	Comparative Importance of Average Value (s_j)	Coefficient ($k_j=s_j+1$)	Recalculated Weight $\left(w_j=\frac{x_{j-1}}{k_j}\right)$	Weight $\left(q_j=\frac{w_j}{\sum w_j}\right)$	Final Weights
C_{2-1}		1	1	0.374	0.049
C_{2-2}	0.14	1.14	0.877	0.328	0.043
C_{2-3}	0.11	1.11	0.790	0.296	0.039

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Table 6. Final weights of sub-criteria in context with pesticides mixing and spraying process

Sub-Criteria	Comparative Importance of Average Value (s_j)	Coefficient (k_j=s_j+1)	Recalculated Weight $\left(w_j = \frac{x_{j-1}}{k_j}\right)$	Weight $\left(q_j = \frac{w_j}{\sum w_j}\right)$	Final Weights
C_{3-1}		1	1	0.264	0.030
C_{3-2}	0.18	1.18	0.847	0.223	0.025
C_{3-4}	0.16	1.16	0.730	0.192	0.022
C_{3-3}	0.13	1.13	0.646	0.170	0.019
C_{3-5}	0.15	1.15	0.561	0.148	0.017

Table 7. Final weights of sub-criteria in context with weed pulling process

Sub-Criteria	Comparative Importance of Average Value (s_j)	Coefficient (k_j=s_j+1)	Recalculated Weight $\left(w_j = \frac{x_{j-1}}{k_j}\right)$	Weight $\left(q_j = \frac{w_j}{\sum w_j}\right)$	Final Weights
C_{4-1}		1	1	0.370	0.055
C_{4-2}	0.12	1.12	0.892	0.330	0.049
C_{4-3}	0.11	1.11	0.804	0.298	0.044

Table 8. Final weights of sub-criteria in context with rice harvesting process

Sub-Criteria	Comparative Importance of Average value (s_j)	Coefficient (k_j=s_j+1)	Recalculated Weight $\left(w_j = \frac{x_{j-1}}{k_j}\right)$	Weight $\left(q_j = \frac{w_j}{\sum w_j}\right)$	Final Weights
C_{5-1}		1	1	0.224	0.044
C_{5-2}	0.13	1.13	0.885	0.198	0.039
C_{5-6}	0.11	1.11	0.797	0.178	0.035
C_{5-4}	0.16	1.16	0.687	0.153	0.030
C_{5-5}	0.16	1.16	0.592	0.132	0.026
C_{5-3}	0.18	1.18	0.501	0.112	0.022

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Table 9. Final weights of sub-criteria in context with threshing process

Sub-Criteria	Comparative importance of Average Value (s_j)	Coefficient ($k_j=s_j+1$)	Recalculated Weight $\left(w_j = \frac{x_{j-1}}{k_j}\right)$	Weight $\left(q_j = \frac{w_j}{\sum w_j}\right)$	Final Weights
C_{6-1}		1	1	0.252	0.043
C_{6-3}	0.15	1.15	0.869	0.219	0.037
C_{6-4}	0.11	1.11	0.783	0.197	0.033
C_{6-2}	0.13	1.13	0.693	0.174	0.029
C_{6-5}	0.12	1.12	0.618	0.155	0.026

Table 10. Overall ranking of all the criterion and sub-criteria

Symbols	Criteria and Sub-Criteria	Criteria Ranking	Sub-Criteria Ranking
C_1	**Land preparation process**	**1**	
C_{1-1}	Irritation from smoke during burning rice stalks, if any.		6
C_{1-2}	Musculoskeletal problems from lifting and carrying tools or equipments.		10
C_{1-3}	Injuries from hand start of plowing and harrowing machines.		16
C_{1-4}	Exposure to diesel fumes from plowing and harrowing tractors.		13
C_{1-5}	Exposure to loud noise from plowing and harrowing tractors.		18
C_{1-6}	Injuries from plowing and harrowing blades.		20
C_{1-7}	Exposure to vibration of plowing and harrowing machines.		22
C_{1-8}	Injuries during operation of plowing and harrowing tractors.		25
C_{1-9}	Injuries from stepping on shell.		23
C_{1-10}	Musculoskeletal problems from carrying heavy pumping hoses or pipes.		24
C_{1-11}	Musculoskeletal problems from incorrect working postures.		26
C_2	**Seed soaking and scattering/Fertilizer applying process**	**5**	
C_{2-1}	Musculoskeletal problems from carrying heavy containers.		2
C_{2-2}	Puncture from bamboo sticks of seed containers.		4
C_{2-3}	Exposure to wet and humid soil.		5
C_3	**Pesticides mixing and spraying process**	**6**	
C_{3-1}	Exposure to loud noise of pesticide applying machines.		11
C_{3-2}	Exposure to vibration of pesticide applying machines.		15
C_{3-3}	Injuries from falling of pesticide applying machines.		19
C_{3-4}	Musculoskeletal problems from carrying pesticides sprayers.		17
C_{3-5}	Symptoms from pesticide exposures, such as vomiting, skin irritations, nasal irritations, eye irritations, and headache.		21
C_4	**Weed pulling process**	**4**	
C_{4-1}	Musculoskeletal problems from incorrect weeding postures.		1

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Table 10. Continued

Symbols	Criteria and Sub-Criteria	Criteria Ranking	Sub-Criteria Ranking
C_{4-2}	Musculoskeletal problems from weeding by hand.		2
C_{4-3}	Musculoskeletal problems from weeding by machine.		3
C_5	**Rice harvesting process**	**2**	
C_{5-1}	Injuries from manually operated harvester.		3
C_{5-2}	Exposure to vibration of harvesting machines.		5
C_{5-3}	Exposure to noise of harvesting machines.		17
C_{5-4}	Injuries while operating harvesting tractors.		11
C_{5-5}	Musculoskeletal problems from incorrect postures in harvesting.		14
C_{5-6}	Musculoskeletal problems from lifting heavy rice stacks.		8
C_6	**Threshing process**	**3**	
C_{6-1}	Injuries from manually operated thresher by striking on wooden frame or using hand operated mechanical thresher or using draft animal driven thresher.		4
C_{6-2}	Exposure to vibration of threshing machines.		12
C_{6-3}	Exposure to noise of threshing machines.		7
C_{6-4}	Musculoskeletal problems from incorrect postures in threshing.		9
C_{6-5}	Exposure to grain dusts.		14

CONCLUSION

In the present study considering different rice farming activities as different criteria for SWARA method, it was found that land preparation process ranked the first, followed by rice harvesting process, threshing process, weed pulling process, seed soaking and scattering/fertilizer applying process, and pesticides mixing and spraying process at the last rank, respectively. While considering the different risks involved in various farming activities as sub-criteria, it was found that musculoskeletal problems from incorrect weeding postures in the criteria of weed pulling process ranked the first, while musculoskeletal problems from incorrect working postures in the criteria of land preparation process ranked the last.

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KEY TERMS AND DEFINITIONS

Agricultural Injury: It is the injury that occurs while performing farm work.

Biological Hazards: It refers to the biological substances which may cause harmful effects to the health of living organisms.

Chemical Hazards: It refers to the dangerous and poisonous chemicals which may cause harmful effects in the workplace.

Farming: Farming is a part of agriculture. It is the growing of crops or keeping animals by people for food and raw materials.

Injury: Injury is the damage to the body caused by external force. This may be caused by accidents, falls, hits, weapons, and other causes.

Occupational Health: It refers to the identification and control of the risks arising from physical, chemical, and other workplace hazards in order to maintain a healthy and safe working environment.

Physical Hazards: The factors or circumstances which may cause harmful effects with or without contact.

Psycho-Social Hazards: It refers to the risks to the mental and emotional health and safety of workers, such as job insecurity, poor work life balance, and long working hours.

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Chapter 76
Exploring Blue- and White-Collar Employees' Well-Being at Work System:
Differences in Indicators of Physical and Psychosocial Conditions of Occupational Groups

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ABSTRACT

The aim of this study was to examine occupational group-related differences in well-being at work (WBW) indicators ranging from real accidents, absences and retirement to experienced pleasure at work. Occupational group included two categories: blue- and white-collar employees. The study is based on analysing national statistics or ones of various industrial sectors (Study 1), or bases on findings of questionnaires in Finnish case companies (N=7) (Studies 2 and 3). WBW questionnaires answered by 3500 employees. Analysis utilised data that employees of two occupational groups, or company and national statistics revealed about WBW. Analysis was based on factors related to employee, task, tool, organisation and work environment (traditional work system (WS)), psychosocial factors, and information and communication within WS. The biggest and statistically significant differences were emphasised in results and discussion. Although two groups' roles and tasks provide reasons for many differences, the ones should be measured, thoroughly discussed and consciously managed.

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INTRODUCTION

General Background

People in various roles, as well as their tools (e.g., technology), are the core elements of the jobs carried out within a work system. A fluent interplay of all system elements is necessary for successful work. The work system (WS) is a holistic concept that addresses all the relevant elements (employee, task, tool, organisation and work environment) and aspects of working (ISO, 2004). Organisations tailor WSs to fit various industries and services and to act as enablers of businesses; for example, they may be used as well for describing how to achieve desired outcomes for employees and patients in contemporary healthcare (see Hignett, Carayon, Buckle & Catchpole, 2013). The relevant elements provide a framework for a system's outcomes and functioning including, in our version, psychosocial interaction, social skills, information, knowledge and communication (Figure 1). As Hatch & Cunliffe (2013) concluded, differences and changes in organisations, including technologies and management, affect social relationships, attitudes and feelings at work. This conclusion is an important basis for our approach.

Both the empowering and defending characteristics must be included in current and future WSs. The former function is broadly related to desired outcomes (Figure 1), i.e., high performance of employees, including happiness as part of well-being at work. The latter function addresses undesired outcomes, i.e., various types of ill-being, including complaints, diseases, accidents, injuries, absences, early retirement, losses, errors, non-conformities, deviations concerning quality and risks in general.

We use the following definition of well-being at work: "WBW means safe, healthy, and productive work in a well-led organisation by competent workers and work communities who see their job as meaningful and rewarding, and see work as a factor that supports their life management" (Anttonen & Räsänen, 2009, p. 17). This definition is primarily limited to the context of WSs in our study, i.e., home and leisure contexts and living conditions are excluded.

The scope of this study involves a diverse range of employee positions and roles as subjects and objects within WSs and organisations. We examine employees' experiences of their WS conditions, as well emphasising psychosocial factors and employees' skills, information and communication. On the other hand, based on statistical facts, employees' accidents at work, absences and early retirement are dealt with.

Diverse individuals in a WS can be divided into two occupational groups, categories: blue- and white-collar employees. The European Union's (EU's) general classification of occupations, which we utilise in this study, makes the following divisions: (1) managers; (2) professionals; (3) technicians and associate professionals (including science, engineering, health, business, administration, legal, social, cultural, information and communication professionals); (4) clerical support workers; (5) service and sales workers; (6) skilled agricultural, forestry and fishery workers; (7) craft and related trades workers (including building, metal, machinery, handicraft, printing, electrical, food processing and wood working); (8) plant and machine operators and assemblers (including drivers); and (9) elementary occupations (including cleaners, helpers, agricultural, forestry and fishery, mining, construction, manufacturing and transport labourers) (Statistics Finland, 2016). Categories 1 to 4 are considered white-collar occupations by us, whereas blue-collar occupations comprise those in categories 5 to 9.

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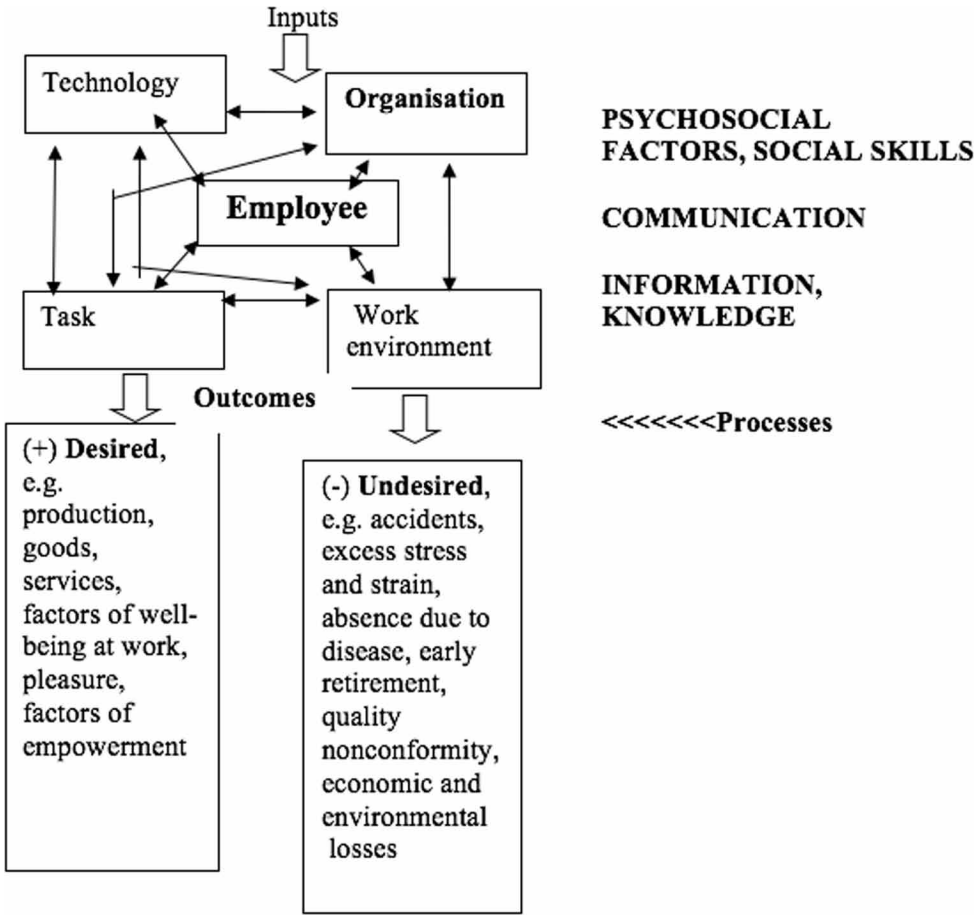
Figure 1. Model of the work system with outcomes, modified to represent a general systemic structure and the enablers and processes behind desired and undesired outcomes at work. Psychosocial factors, social skills, information, knowledge, and communication, contribute and play an essential role (Carayon & smit, 200; Carayon et al., 2014; ISO, 2004; Smith & Carayon, 1995; Smith & Sainfort, 1989; Vayrynen, Roning & Alakarppa, 2006; Vayrynen & Nevala, 2010; Vayrynen, Jounila, Latva-Ranta, Pikkarainen & von Weissenberg, 2016)



Balanced and Optimal: Characteristics of WSs and WBW

Well-being at work can be identified by job demands and job resources in the following theoretical models. The job strain model defines WBW as the balance between job decision latitude and job demands (Karasek & Theorell, 1990). The "job resources and demands" model (Bakker & Schaufeli, 2004; Demerouti, Bakker, Nachreiner & Schaufeli, 2001) classifies WBW by the balance between job demands (physical or mental) and job resources (physical or mental). Effort-reward balance theory defines WBW as the balance between intrinsic and extrinsic effort and rewards (Siegrist, 1996). Main resources are linking mainly to job conditions, leadership and management, the balance between work and family, the social capital and social interaction at the workplace, the work itself and for example personal characters

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(Hobfoll, 2002) and that they are correlating with work engagement (Bakker, Hakanen, Demerouti & Xanthapoulou, 2007; Xanthapoulou, Bakker, Demerouti & Schaufeli, 2009).

WBW is associated with better work ability, better work quality and fewer absences or leaves due to disease (Karasek & Theorell, 1990). An essential resource for WBW is social capital which reflects reciprocity, trust and societal values; employees also need to see rules and activity toward shared goals within the work community and desired outcomes of its business (see Figure 1) (Carayon, 2009; Chen, Wei, Wang & Pen, 2016; Luthans, Youssef & Avolio 2007). WBW is influenced by factors including work conditions, organisational position, communication between co-workers, individual physical and mental resources, positive interventions, recuperation from work stress and work-life balance (Demerouti et al., 2001). WBW can be associated with WS balance theory, i.e., if an acceptable holistic balance situation is not achievable by minimising the negative aspects of an element of WS, the desired WS balance should be improved by enhancing the positive contributions of the other elements to WS (Smith & Carayon, 2000) as can be seen in Figure 1, and according to Karasek & Theorell's (1990) model of job strain. Social support was considered a psychosocial factor in Karasek & Theorell's model; this can be an important dimension for enhancing WBW (Carayon, 2009; Karasek & Theorell, 1990).

Differences of experienced WBW among blue- and white-collar employees is further explained by the work challenges and features. White-collar jobs characteristically involve more autonomy and positively challenging tasks than blue-collar jobs which are essential features for WBW (Toppinen-Tanner, Kalimo & Mutanen, 2002). Role problems, interpersonal conflicts, cognitive and psychosocial workloads are the main reasons for work stress in white-collar jobs whereas high monotony and low control and autonomy are the main factors creating job strain and stress (Toppinen-Tanner et al. 2002).

A work system can generate both desired and undesired outcomes (see Figure 1). Therefore, it is important to analyse how WSs and their elements should be designed, balanced and managed optimally so that work is satisfactory for desired outcomes, employees in the focus, in the role of a subject or an object (Carayon & Smith, 2000). The interactive combination of the elements of a WS should be as productive, safe and high-quality as possible (cf. ISO, 2004; Väyrynen & Nevala, 2010). Absences from work or early retirement, which may result from injury or occupational diseases, cause considerable losses to employees, organisations and society. According to the principles of occupational risk prevention, employees must be protected within the whole entity. Empowerment, which can be used as a mechanism for desired outcomes of WBW, must occur within and throughout the system. The control of undesired losses in the WS is linked to concepts such as safety culture and climate, human factors and ergonomics, as well as to a more concrete approach to safety management, including daily actions in every employee's own part of the WS (e.g., Eeckelaert, Starren, van Scheppingen, Fox & Brűck, 2011; Väyrynen et al., 2016). "Own part" includes, e.g., the role of autonomous learning (cf., Noe & Ellingson, 2017). One example of improving WBW could involve applying ergonomics knowledge the design of tools and workstations to improve usability. Whether tangible or intangible, WBW outcomes should be measurable for better information, control and management.

Psychosocial Factors and Social Skills

Work system modelling (Figure 1) is an optimal way to illustrate tangible physical or physiological issues at work, although intangible ones must also be included and evaluated. Intangible issues can predominantly be presented under the umbrella of psychosocial factors and social skills. Wilson & Haines

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(2000) identified the following driver to activate social and technical skills for desired outcomes at work: employees' participation that build and enable motivation, competence and confidence.

Social skills play a central role in the workplace (Orgambidez-Ramos & Almeida, 2017), as well as within specific WSs. Social support from colleagues or supervisor is one important implication of well-functioning psychosocial interaction within WS (Orgambidez-Ramos & Almeida, 2017; Carayon, 2009). Open and fluent interactions increase functionality at work and enhance employee engagement and commitment (Harris & Sherblom, 1999; Kiema, Mäenpää, Leinonen & Soini, 2014; King, 2005). The quality of the supervisor-subordinate relationship has been shown to have a great impact on employee job satisfaction and well-being, reduced staff turnover and employee innovativeness (Graen & Uhl-Bien, 1995; Erdogan & Enders, 2007; Loi, Chan & Lam, 2013).

Research Focus and Objectives

We assume that higher numbers of the key indicators of some undesired features in blue-collar employees, such as sick leaves and accidental injuries, may be obvious due to the differences in many organisations between blue- and white-collar employees. In a way, an extreme part of "bad" WBW comprises physical and mechanical accidents, as well as diseases, that may be considered by many people as events encountered predominantly by blue-collar employees within their WSs, which have tangible risks. These circumstances often cause easily observable periods of absence. On contrary, accidents at home, like those during leisure and commuting, may happen among employees of all occupational groups.

The above mentioned real situation may also be one reason behind probable differences in the employees' experiences of intangible indicators. For instance, the experienced-safety climate scores differed between blue- and white-collar employees of two chemical manufacturing plants within the same company (Bergh, 2011; Bergh, Shahriari & Kines, 2013). Safety climate is a useful concept for this study; it uses a psychological approach to safety culture (Eeckelaert et al., 2011). Safety is here seen as a fundamental prerequisite of WBW in the holistic approach (Anttonen & Räsänen, 2009) we presented in the Introduction. The Nordic Occupational Safety Climate Questionnaire (NOSACQ-50, 2012), consisting of 50 Likert-style statements related to respondent's attitudes and experiences of the workplace, was used to evaluate the safety climate in that chemical manufacturing organisation. Eeckelaert et al. (2011) defined safety culture as the deeper, implicit convictions that are shared amongst the members of a group, and which are expressed through the safety climate, i.e., the shared experiences of workers regarding safety and their working environment (cf. Huang et al., 2015). The NOSACQ-50 (2012) has been used by various industries in many countries, including this case from the Swedish chemical process industry. The main differences observed in the safety climate of this Swedish chemical process industry site were the following: First, shift workers chose significantly lower Likert-scores on the NOSACQ-scales, indicating worse safety climate, than daytime-only workers. The proximity of production lines, while shift-workers are obliged to work in their areas of the whole WS, was seen as another reason for the differences in experienced lower level of safety. Second, blue-collar employees had significantly lower ratings ($p < .01$) for many safety management dimensions than managers and supervisors (who represented typical white-collar staff). For the current study, we wanted to see whether one's occupational group (blue- versus white-collar employees within the same enterprise), one's role in the WS and in the organisation were related to differences in WBW, based on our indicators and WBW studies that emphasise safety climate and communication. We also wanted to check whether the phenomenon

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discussed in the section above is present (and if so, to what extent) in our own results, as well as in the statistics-based resources we gathered. So, the research questions were:

1. Do statistics about absence from work, accidents and retirement reveal possible differences, and their reasons, related to occupational group?
2. Are there differences in experienced indicators of WBW between blue- and white-collar employees in the workplaces of our study material, and if so, which differences are the biggest?
3. What kinds of indications about the differences are presented in the literature?

MATERIALS AND METHODS

First, we collected and reviewed quantitative statistical data from various literature sources, registers and records (see Study 1). We had access to official nationwide data of interest, or studies based on that, from Finland and Sweden, as well as EU data (mainly statistics regarding accidents, absence from work and retirement). Additionally, we used detailed data from large companies, including a metal processing company (Finland), and energy sector company (France).

Our study's following materials were gathered from the case companies (N = 7) in the fields of manufacturing (of metal components or vehicles), mechanical engineering and various other services (telecommunication, industrial planning and construction, energy, transport). We used survey-style questionnaires as our data collection method, which were answered by approximately 3500 employees of all occupational categories. In the Studies 1 and 2 the respondents assessed their own WBW, based on their experiences of their own jobs. For the core material each respondent was asked to give his or her opinion (the degree of agreement) with presented statements (opinion or description) of a given WS or WBW condition. The choices ranged from 1 (strongly disagree) to 5 (strongly agree) (a five-point Likert scale to measure satisfaction (Allen & Seaman, 2007)). The field data were gathered during 2013 and 2014. The analysis took into account the WS's characteristics and psychosocial conditions within. The six-case study (see Study 2) examined companies situated in northern Finland. Study 3 focused on one large company operating in all parts of Finland. Some results related Studies 1, 2 and 3 have been presented already in the earlier reports, but predominantly we analysed and discussed all here in a new way and for a new purpose (cf., Filppa, 2014; Kiema et al., 2014).

We used a large, diverse set of WBW indicators available for studying the aimed differences between blue- and white-collar employees, and presented it generally in the Introduction chapter and in details in Results chapter and in the Appendix, comprising more than 100 single variables related to our multi-factorial approach to WBW. Approximately 10% of these factors were considered in Study 1; the allocations for Studies 2 and 3 were 20% and 70%, respectively. The close analysis and results presentation focused on occupational group-based differences in each of the three studies.

Study 1

For this study, we searched and used literature and published nationwide data from Finland and Sweden, as well as EU-wide data; this data concerned occupational accidents, especially causes and circumstances of the ones, absence from work and retirement (European Commission, 2009; TVK, 2016; Sysi-Aho, 2016; Laaksonen, Rantala, Järnefelt & Kannisto, 2016; Falkstedt, Backhans, Lundin, Allebeck & Hem-

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mingsson, 2014; Mänty et al., 2016; FIOH, 2017). We needed sources that described the occupational group of employees who had encountered accidents, too. Many sources lack this variable.

Further, the following aspect was an essential one for Study 1: Normally, like the above EU-wide analysis (European Commission, 2009), only accidents at work are dealt with, while our own study (Yrjämä-Huikuri & Väyrynen, 2015) and a French one we found (Verrier & Chevalier, 2007), takes into account the whole daily life of employees. So, not only accidents at workplace but as well all those ones from which both the employees and employers suffer need the consideration. Accidents at home, leisure accidents, and commuting accidents to and from workplace are important undesired outcomes though not directly related to WS causes but affecting WS and WBW indirectly. The corresponding total analysis of employees' accidents is not so common, at least as what we as authors know.

Study 2

The study of which Study 2 is a part composed of many different empirical activities (Filppa, 2014; Kiema et al., 2014). First in the study, a survey within six companies was conducted to establish all employees' experiences of features of their company's WBW and WSs (N(statements) = 22, see Appendix Figure 4). Study 2 is predominantly based on this questionnaire survey. The questionnaire form consisted of questions about respondents' background and included space for them to write their views or short descriptions about current situation at work and possible needs for developments of it. The answers of the blue- and white-collar employees were analysed to reveal how they separately felt about their WS, and specifically the communication and psychosocial factors related to WS and WBW.

The survey was conducted using a web-based form, but some respondents who did not have access to the Internet were given a paper form. The questionnaires were distributed to employees at different levels of the participating companies. Of the potential respondents (N = 658), 431 (66%) ones returned the form (364 blue- and 67 white-collars).

Study 3

Our third case study, Study 3, is based on studying empirically and extensively occupational safety (OS) and background and related issues of WS and WBW in Finnish rail transport and multiple of its cargo, service, construction, support, engineering, etc. activities. The goal of the project was to generate knowledge about OS, and attitudes related to it, of the workers and their superiors, and experts and upper management in a corporation, the dominating transportation operator in Finland. Key focuses included safety management, OS culture and climate, professional interactions and communication, holistic WBW and total quality management. The survey questionnaire for this study was distributed to the entire staff of the corporation, and approximately one-third (N = 3042) of staff members answered to it. Both blue- and white-collar employees participated in the study, so it was possible to examine the differences between them revealed by the survey. The questionnaire was available whether as printed form and via the Internet. In addition to the core OS issues (71 Likert-style questions, mainly statements about experienced OS and attitudes), the questionnaire also contained questions about respondents' backgrounds, as well as questions concerning key matters of the corporation's transport and other operations.

As members of the original research team, the authors further processed the data of survey questionnaire, specifically were analysed its key findings and their statistical significance, for the purposes of the

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current new study; i.e., to reveal the differences between blue- and white-collar employees in answers and opinions about OS culture, and WBW and WS in general.

RESULTS

Study 1

In Finland from 2005 to 2014, employees with a primary or secondary education spent more time on a disability pension than did people with a tertiary education in all disease categories that reduce ability to work (Laaksonen et al., 2016). Predominantly, blue-collar employees have only a primary or secondary education, without any further higher education, and typically their roles in WSs and organisations are linked to manual, operational tasks. Retirement statistics in Finland show that socioeconomic status, education level, occupational group and WS all influence retirement (Laaksonen et al., 2016). Frequent retirement due to disability pension is linked to more strenuous physical workload or occupational hazards (Laaksonen et al., 2016; Mänty et al., 2016). Regarding the neighbouring country of Sweden, Falkstedt et al. (2014) concluded that "…working conditions seem to partly explain the increased rate of disability pension among men and women with lower education even though this association does reflect considerable selection effects based on factors already present in late childhood." High physical strain at work and low job control also both contributed to explaining the associations between low education and disability pensions in multivariable models (Falkstedt et al., 2014). The following factors may encapsulate sources of physical strain: (1) daily heavy lifts; (2) repetitive and one-sided work movements; (3) awkward work postures; (4) heavy shaking or vibrations; (5) daily perspiration from physical exertion; (6) contact with dirt; (7) deafening noise; (8) risk of exposure to accidents.

With regard to work absences and accidents vs. occupational group within organisation, we found the following report: The average number of work absences in Finnish municipalities for white-collar workers is around half the average for blue-collar workers who perform physical tasks (FIOH, 2017). The average annual days of absence from work in various occupations within Finnish municipalities, employing hundreds of thousands of individuals, are as follows:

- 11 days for managers and professionals;
- 16 days for office clerks or corresponding assisting professions;
- 23 days for labourers of physical tasks or employees carrying out direct provision of services.

Occupations and WSs that are typically blue-collar are clearly linked to a higher incidence of injuries from accidents, as shown in EU-wide analysis (European Commission, 2009), in Finnish studies (Yrjämä-Huikuri & Väyrynen, 2015; Sysi-Aho, 2016; TVK, 2016) and in a French company case study description (Verrier & Chevalier, 2007).

European Commission (2009) reports the following:

For example, construction companies do not only employ building workers, but also engineers and office clerks. Occupation therefore provides a more accurate reflection of potential risks at work. For both fatal and non-fatal accidents at work, the highest incidence rates were observed for industrial and agricultural workers. Around 75% of fatal accidents and 68% of non-fatal accidents occurred among 'craft and related trades workers', 'machine operators' or workers employed in an 'elementary occupation'.

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At a more detailed level of classification, the incidence rate for non-fatal accidents at work was highest among 'labourers in mining, construction, manufacturing and transport', 'stationary and mobile-plant operators' and 'extraction and building trade workers'. (p. 26)

The incidence rate for the employees classified according to the last lines of the above quote typically reaches values up to 2.5 times as high as the amount for all occupations on average (around 2700 accidents with more than three days of absence per 100,000 employees). Sysi-Aho (2016) has concluded that almost equal occupations or branches of business show the highest numbers in Finland, alike to the EU numbers above.

Regarding the home and leisure injuries of people employed by the large energy sector company in France (47,681 employees), Verrier & Chevalier (2007) reported that the risk of injuries was higher among men than women (RR = 1.3, (a relative risk estimate)); among men, the risk was five times higher among operating employees (i.e., blue-collar workers) than managers (i.e., white-collar workers). The difference in risk was similar for the company's employees during work hours (Verrier & Chevalier, 2007), regarding the control of accidents the authors conclude: "… analysis of the behavioural factors of injuries led us to propose programs aimed at changing the risk behaviours related to do-it-yourself, stairs falls and gardening."

Quite similarly, Yrjämä-Huikuri & Väyrynen (2015) analysed all accidents at the large Finnish metal processing company (years 2009-2013). In their study, an accident constituted one or more day's absence from work. The analyses showed that accident risk was statistically significantly lower during time at the workplace than during time spent commuting, or during home and leisure time. Accident rates among staff, production workers (i.e., blue-collar workers) and supervisors, including experts (i.e., white-collar workers), were compared based on the RR statistic (Yrjämä-Huikuri & Väyrynen, 2015): The estimated RR statistic (metal processing company, year 2012, N(employees) = 3119) shows that the incidence of injurious home and leisure accidents was relatively higher for blue-collar employees than for white-collar employees (3.7). The corresponding relative risk RR statistic for accidents at work was 9.2.

The statistics and studies show endless amount of details of accidents and injuries. In Finland, most fatal accidents are specially investigated utilising a research-like, so-called TOT investigation procedure (TVK, 2017): Finnish Workers' Compensation Center's (TVK) TOT reports show the dominance of the blue-collars, while including 50 last cases between 2010-2018(early), only 3 of them concerned white-collar employees (managers or entrepreneurs) as victims. TVK's research as well describes the following: "In the oldest age groups (over 60 years) accident frequency was higher than among middle-aged employees. Employees older than the pension age (63 years) had a higher accident frequency; 36% higher than that of the 50–55 year age group, which had the lowest accident frequency. The accidents of the oldest age group were also more often serious." (Salminen, Heinonen, & Sysi-Aho, 2016. In addition to the variable age, the variable gender causes differences: workplace accidents happen most often to men (62%) whereas accidents related commuting to and from workplace are predominantly a problem of women (68%) (TVK, 2018). The same source describes the final injuring mechanisms that comprise, in order of frequency (5 of them): horizontal or vertical impact with or against a stationery object (the victim is in motion); physical or mental stress; contact with sharp, pointed, rough, coarse material agent; trapped, crushed, etc.; struck by object in motion, collision with. The authors did not have opportunities, based on the published general sources, to clarify how the occupational group affects the distribution of the most ones of the above listed important variables.

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Study 2

Appendix Figure 4 shows the individual items of the questionnaire, with the means and standard deviations for each item, listed separately for blue- and white-collar employees. As a whole, white-collar respondents gave higher assessments, i.e., agreed more, on the Likert scale 1…5 than blue-collar respondents. The means were 3.8 and 3.4, respectively.

Table 1 shows the distribution of the scores of the experience-based five-point Likert scale assessments for each of 11 statements given by each blue-collar (N=364) and white-collar (N=67) employee (N(total) = 431) from each of the six companies in the case study. The more in-depth analysis was of 22 statements in which the difference (measured as mean) was the biggest between the two analysed employee categories (compare with Appendix Figure 4). The Chi-square statistic, calculated from cell frequencies of the Table 1, shows a statistically significant difference between the assessments of blue- and white-collar employees.

Table 1. Distribution of scoring experience-based five-point likert scale assessments for 11 statements, as given by each blue-collar (N=364) and white-collar (N=67) employee (N(total) = 431) in all six of the case study companies. The more in-depth analysis represents 11 (of total 22) statements in which the difference (measured as mean) was the greatest between blue- and white-collar employees (compare with Appendix Figure 4)

Employee category	Distribution of assessments by employees (N=431) vs. employee category, Likert-scored values, % (N(blue-collar)= 364 N(white-collar)= 67)					Total, assessments
	Likert-score 1	**Likert-score 2**	**Likert-score 3**	**Likert-score 4**	**Likert-score 5**	
Blue-collar	5	12	34	34	15	4004 (100%)
White-collar	1	5	26	46	22	737 (100%)
Grand total						4741 (100%)

The chi-square statistic is 113.4485. The *p*-value is < 0.00001

Figure 2 shows the mean Likert scores (y-axis) from experience-based assessments of 22 statements for blue-collar (N=364) and white-collar (N=67) employees (N(total) = 431) in the six different companies of the case study (x-axis). Analysis of variance for revealing the effect of employee category (blue- or white-collar) and company was carried out (Table 2). The employee category had a significant statistical effect on Likert scale scoring; i.e. white-collar employees chose higher scores ($p<0.05$) than blue-collar employees, although the small number of respondents from Company 3 did not show any difference at all. The company has effect but not enough to reach the level of statistical significance.

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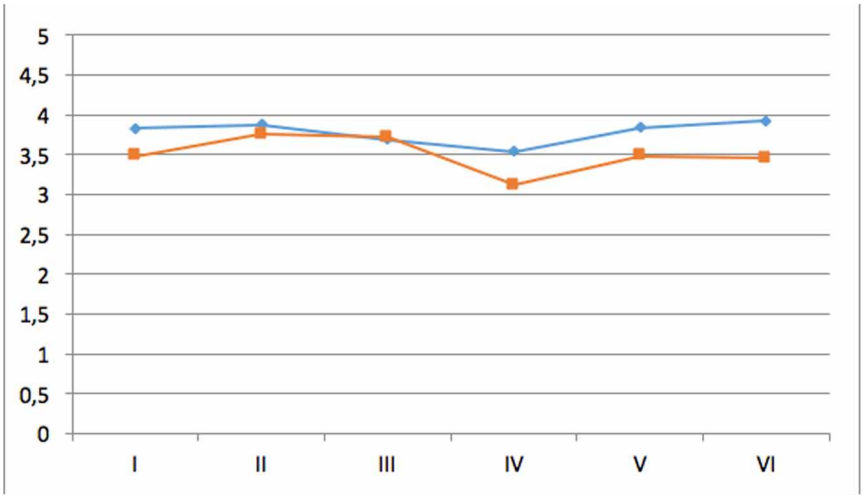
Table 2. Result of two-way analysis of variance of the data in Figure 2. Employee category (i.e. blue- or white-collar) has a significant statical effect on Likert scale scoring; the scores chosen by white-collar employees were higher ($p<0.05$) than the blue-collar employees. The company has effect but the significance was only near the level $p<0.1$ ($p=0.14$)

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Company	0.263791	5	0.052758	2.811214	0.140574	5.050329
Blue- or white-collar	0.233802	1	0.233802	12.45809	0.016747	6.607891
Error	0.093835	5	0.018767			
Total	0.591429	11				

Figure 2. Mean Likert scores (y-axis) from experience-based assessments of 22 statements for blue-collar (red line, N=364) and white-collar (blue line, N=67) employees (N(total = 431) in the six different companies of the case study (x-axis). Analysis of variance for revealing the own effect of employee category and company was carried out (Table 2)



The five biggest differences between blue- and white-collar employees, in order of magnitude, were the following (cf. Appendix Figure 4, in all these five comparisons white-collars gave higher scores than blue-collars). The differences in parentheses show the difference in the mean scores between blue- and white-collar employees.

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Statement 20: I get enough opportunities to participate in the training needed. (0.9)
Statement 16: I get enough opportunities to take part in the development of workplace issues. (0.8)
Statement 22: I am active in communication about my workplace. (0.6)
Statement 5: Interaction with customers works well. (0.6)
Statement 19: I can put forward ideas that aim to improve the product or working methods. (0.5)

Overall, blue-collar employees seem to be less active in contributing to developmental activities: they may feel that they need a better knowledge base, a more active role and more opportunities in order to give ideas for improvements. On the other hand, only a small difference was found between blue- and white-collar employee responses regarding the straightforward contacts and communication between colleagues, the role of enabling meetings and management, and job conditions provided by the company (cf. Appendix Figure 4).

Study 3

Appendix Figure 5 shows the WBW-related items of the questionnaire that revealed the biggest differences between blue- and white-collar employees, as well as the mean values for each item. The items are categorised into two groups: (1) those with the biggest difference in mean values, ranging from 0.8 to 0.2; and (2) the employee category (blue- or white-collar) that gave higher responses (higher Likert scores on the scale 1…5).

Figure 3 is an illustration based on Appendix Figure 5, and shows the statements with the biggest differences between blue- and white-collar employees. Examples of the statements of this figure included: The problems are not stuck to until something happens; I am an active actor in the development of my work and workplace; The frequency of accidents in my job is too high; Rushing my tasks affects occupational safety; Safety is a part of general quality in our activities; Accidents and disturbances are actually totally useless events.

DISCUSSION

Safety Performance and Other Statistics-Based Findings

According to Study 1, more frequent early retirement due to disability to work pension is linked to more strenuous physical workload or more occupational environmental hazards, and both of these risks are typical in blue-collar employees. In the same way, Study 1 showed that incidences of accidents at work and absences from work were clearly more common in blue-collars than white-collars within work organisations. Our examples from literature present evidence that the above phenomena can be alleviated, and many means for that are theoretically very near to the issues we see important for optimal WS with more minimal amount of the causes for real undesired features related to decreased WBW. The Introduction emphasises especially the following issues linked with achieving good results in prevention of the phenomena listed: knowing in detailed way the WS in question, enhancing information and communication processes, and involving all in organisation for developments in risk management. More and more often all shall include supplying companies' employees and HSEQ enablers for them (e.g., Väyrynen et al., 2016).

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Figure 3. Mind map illustration of results of five-point likert scale assessing attitudes toward occupational safety in Study 3 (N = 3042 (total number of respondents)). Fourteen statements, of the total of 71, appeared to be the most differentiating between blue- (N=1840) and white-collar (N=1202) employees, based on the means of the scores. Details on statements are included in Appendix Figure 5. "Clearly more" indicates that the difference in distribution of blue- and white-collar worker responses to a given statement is statistically significant (Chi-square test, p<0.05)

For progress, the importance of a lot of knowledge within organisation and its management is seen as a general key by Knardahl et al. (2017), Leino, Elfving & Ballard (2010) and McKinnon (2016), too. In detailed views, e.g., observation of factors related to safety and other WS factors by all employees, and discussion-based (e.g.,"tool box" meetings), and further improving WS to prevent or alleviate risks is emphasised (Levitt & Samelson, 1993; Van der Schaaf, 1991). Actually, this can be called one of concrete core features of safety culture (NSC, 2013; Reason, 1991). Construction sector is a concrete example of positive culture change cases within industries though blue-collar jobs and demanding WSs traditionally define the whole sector. For instance, between 2005 and 2009, one of the biggest construction companies in Finland, with 2900 employees, improved its safety performance dramatically, and its accident rate decreased from 57 to 9 accidents per million work hours (Leino et al., 2010).

We propose that many kinds of different new analyses or discussions related to accidents vs. occupational group should as well be carried out: for instance, the ones that are dealing with

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- Strategy, financial effects (cf., Reiman, Räisänen, Väyrynen, & Autio, 2018; FIOH, 2018)
- Type of boss (cf., Mellish, 2017)
- Autonomous learning as an approach for safety promotion instead of just attending formal training, courses, development events, and programmes (cf., Noe & Ellingson, 2017)
- Just culture (cf., Dekker, 2007)
- Participatory, psychosocial intervention was not always "a straight way" to successful results only (cf. Gupta, Wåhlin-Jacobsen, Abildgaard, Henriksen, Nielsen, & Holtermann, 2018)

Information and communication (IC) as general topics are closely linked with the above safety knowledge, but as well, e.g., competence, wisdom, social and technical skills, discussion, interaction, feedback, various concrete means of instruction and communication, IC technology, motivation, and creating and maintaining confidence comprise essential ones (Crawford, Davis, Walker, Cowie & Ritchie, 2017; Glendon, Clarke & McKenna, 2006; Kath, Magley & Marmet, 2010)

The last-mentioned confidence is a key to success in utilising participation (Wilson & Haines, 2000). Employee participation, psychosocial and organisational mechanism, is generally recommended and results of it presented (Rajala & Väyrynen, 2013; Vinodkumar & Bhasi, 2010).

Findings-Based Experiences

The biggest differences in the indicators of WBW experienced by the blue- vs. white-collar employees in manufacturing and engineering companies were associated with the following themes: participation in training and development within the organisation, professional communication in the workplace, the ability to put forward ideas, and level of interaction with customers.

In a large rail transport corporation with many divisions and a wide spectrum of occupations, employees experienced that improvement occurs only after something undesired happens. Our results also revealed that blue-collar employees considered their collaboration with superiors weaker than white-collar employees did. White-collar employees found their own role in WBW more important than blue-collar employees did. Blue-collar workers considered WBW part of the organisational strategy, whereas white-collar workers considered WBW a component of self-management. Blue-collar employees considered active participation in the organisation more important than white-collar employees did.

The findings show that the biggest differences between blue- and white-collar employees relate to involvement in organisational activities and management, decision-making and developmental action within the WS (cf., "I am an active actor in the development of work and workplace"). The differences between blue-collar and white-collar employees seem, on the other hand, to be revealed by increased work absences, accidents and early retirement, related to occupational and organisational features. These features are predominantly due to physical strenuousness within a WS that is typical of certain sectors' jobs. However, due to a wide variety of nuances related to WBW, the study of effective solutions should be careful and well considered.

Further Key Arguments

We analysed the results to determine the reasons, which were found to be as well psychosocial, behind these observed differences. We wanted to see whether and how management is able to enhance WBW as we know how management has clear impact on WPW (Proudfoot, Corr, Guest & Dunn, 2009). A

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growing body of research indicates that a large number of problems in work settings are related to job stress and burnout (Harnois & Gabriel, 2000; Rousseau, Aube, Chiocchio, Boudrias & Morin, 2008) which are resulting from social interaction (Schaufeli & Peeters, 2000). Social and communication skills are associated with two indicators of psychological well-being as part of WBW: reduced symptoms of depression and increased life satisfaction (Segrin & Rynes, 2009). Current research has also shown that fluent internal communication is associated with commitment, discretionary effort and meaningful work, which can all be seen as factors of work engagement (Hayase, 2009; Schaufeli & Bakker, 2004). Juvani et al. (2016) emphasised the importance of organisational justice in the workplace. Organisational justice is similar to confidence or trust (cf. Wilson & Haines, 2000). Juvani et al. (2016) found that "supervisors' fair treatment of employees and fair decision-making in the organisations are associated with a decreased risk of disability pensioning from all causes, depression and musculoskeletal diseases."

As pioneers of the concept of WS within a scientific context, Smith & Carayon (2000) stated that when an acceptable balance is not achievable, able to be compensated, through minimising negative aspects within a WS, the whole system should be improved by enhancing the positive aspects. This suggestion could be realised more frequently in solutions, by utilising the standards of good practices at work organisations (ISO, 2011; ISO, 2016a). Blue-collar jobs do not inevitably mean worse work conditions and experiences of work that are more negative than those of white-collar employees – a lot of means for improvements exist. Our definition of WS with added functional enablers provides the essential elements and variables for comprehensive analysis.

We have found many links between WS modelling and especially the following: holistic thinking, considering both the body and mind, potential enablers for both success and risks, undesired over- or under-load, excess stress and strain, sustainability, responsibility, and stakeholders (cf., Edwards & Jensen, 2014; ISO, 2016b; Marras & Hancock, 2014; Rocha, Mollo & Daniellou, 2015; Zeilstra & van der Weide, 2013; Zink & Fischer, 2013; Sparer Catalano, Herrick & Dennerlein, 2016; Väyrynen et al., 2016). Regarding company stakeholders, we propose that both blue- and white-collar employees will be remembered in a way that enables progress in their specific areas we think we were able to reveal. How can the in our study presented situation be seen by other stakeholders like the state, municipalities, and various institutions within insurance sector?

The differences between blue- and white-collars' experiences, and in real undesired outcomes related to WBW and WSs, should and can be diminished. Early retirement, occupational diseases and injuries cause not only human suffering and losses but as well high costs to the other stakeholders than the employers and employees in question.

We propose that experienced WBW for different employee groups should be measured using multi-criteria factors, such as the Likert scales used in this study. In addition to the statistics of the organisation, national statistics can be a useful source in studying the differences between occupational groups, blue- and white-collar employees. Actions should be taken within the WS to comprehensively improve work conditions, and to improve leadership as it relates to psychosocial conditions and culture of all.

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APPENDIX

Graph for Statement Questionnaire in Study 2

Figure 4. Mean scores and standard deviations for the statement questionnaire in Study 2 (N = 431). Mean scores are based on the experience-based five-point Likert scale responses to 22 statements for blue-collar (blue line, N=364) and white-collar (red line, N=67) employees (N(total) = 431) in all companies in the case study

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Attitudes on WBW, Especially Safety

Figure 5. Attitudes on WBW, especially safety (study 3)

The biggest differences in the means of Likert-scale assessments	N(blue-collar) =1840 (60.5%); N(white-collar) =1202 (39.5%); N(total)=3042 x_{mean} is mean (total), i.e. calculated for all respondents (N=3042) The difference in Likert distribution in all of these statements is statistically significant (Chi-square test, p<0.05, despite nros 32 and 42)	The Likert-scored value bigger in the employee category
0.8	5 Problems are not sticked to until something happens (x_{mean} = 2.9)	Blue-collar
	10 Managers' and foremen's example related to safety is powerful (3.8)	White-collar
	23 Rushing my tasks affects occupational safety (3.6)	Blue-collar
	65 Violence or the threat of it is often a risk factor in our job (2.1)	Blue-collar
0.7	66 While working I meet unfair treatment (2.6)	Blue-collar
0.6	20 Emphasising quality is not an issue in the actual work (2.1)	Blue-collar
	28 I am an active actor in the development of work and workplace (3.6)	White-collar
0.5	16 Accidents and disturbances are actually totally useless events (2.7)	White-collar
	26 Safety is a part of general quality in our activities (4.0)	White-collar
	29 Protecting environment is a part of our quality activities (3.9)	White-collar
	40 Foremen' daily solutions affect our occupational safety (3.6)	White-collar
	73 The frequency of accidents in my job is too high (2.3)	Blue-collar
0.4	13 I think the public image of our safety is negative (2.2)	Blue-collar
	21 We who work here think that every accident is preventable (3.6)	White-collar
0.3	4 Guidelines and principles of work are clear at my work place (3.7)	White-collar
	12 Our safety affects our company's reputation (4.1)	White-collar
	27 I find me an important actor in a responsible work community (3.9)	Blue-collar
	41 Decisions of management affect our occupational safety (3.4)	White-collar
	43 At my work place, acting against rules is not accepted (3.8)	White-collar
	63 I believe I will avoid accidents during coming five years (4.3)	White-collar
	67 Behaviour of subcontractors' staff affects my safety, too (3.6)	Blue-collar
0.2	2 I think our work climate overemphasises safety (2.6)	Blue-collar
	3 Safe work is a part of my team's normal activity (4.3)	White-collar
	6 My attitude towards safety is based on my own experiences (4.0)	Blue-collar
	8 Our unit's way of acting guides my safety behaviour (3.7)	White-collar
	17 Safety is able to affect my workplace's better profitability (4.2)	White-collar
	22 Due to rushing I neglect safety (3.3)	Blue-collar
	32 Improving tools means effective accident prevention (4.6)	Blue-collar
	34 I think prevention of accidents is an essential part of my professional skills (4.3)	Blue-collar
	35 I find that decreasing of carelessness is needed, and by intervening risk taking (4.5)	White-collar
	42 I think safety promotion is more successful throughout recompensing than punishing (4.5)	Blue-collar
	45 My safety actions are based on skills I have learned, and routines (4.1)	Blue-collar
	46 I know the guidelines of safety (4.1)	Blue-collar
	55 I am proud of my work, enjoying it, and I as well am resilient if I encounter troubles (4.1)	White-collar
	59 Stress decreases safety at work (4.2)	Blue-collar
	68 I think we work in safer way than our subcontractors' staff (3.9)	Blue-collar

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Chapter 77
Individual Risk Assessment (ERIN): Method for the Assessment of Workplace Risks for Work-Related Musculoskeletal Disorders

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ABSTRACT

Work-related musculoskeletal disorders (WMSDs) prevention has become a global phenomenon and nowadays is one of the main challenges that ergonomics and work safety professionals face. The evaluation of risk factors exposition related to the WMSDs is one of the main activities that are performed for prevention. In order to accomplish it, many ergonomic assessment methods have been developed. In this chapter, an ergonomic observational individual risk assessment (ERIN) method is presented, which is distinguished for being easy to learn, apply, and it needs short training time. Results on the reliability, validity, and usability studies of ERIN are included too, as well as an example of how it can be used in the workplace intervention process.

INTRODUCTION

Work-Related Musculoskeletal Disorders (WMSDs) prevention has become one of the main focus to the Ergonomics and Occupational Safety and Health fields. It is accepted and acknowledged that these diseases emergence is due to the existence of workstations/tasks that do not meet ergonomic principles, exposing workers to risk factors related to these diseases (NIOSH, 1997). On consequence, from a few years ago, many professionals and researchers have been interested in refining the evaluation of the exposure to risk factors related to the WMSDs, resulting in the creation of new methods/tools and the update of some existent ones (Takala et al., 2010). These can be grouped into three fundamental cat-

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egories: direct measurement, self-report and observational (S. Bao, Howard, Spielholz, & Silverstein, 2007; David, 2005; ISO 11228-3, 2007; Li & Buckle, 1999; Neumann, 2006).

Direct measurement methods usually use sensors placed over the individual's body (electrogoniometers, inclinometers, lumbar motion monitor, among others), and they offer a high accuracy on the measures if used correctly (Stephen Bao, Howard, Spielholz, Silverstein, & Polissar, 2009; N. Corlett, 1995; David, 2005; Li & Buckle, 1999). They are used for simulated tasks study and allow registering body coordinates in real time with high precision. As the main disadvantage, it can be mentioned that the sensors placed on the subject's body can cause discomfort and changes in its behavior, it requires time for the analysis and data interpretation, instrument calibration and workgroups with high qualification and experience. Due to technological limitations, such as the number of entry channels available on an instrument and its space for information storage, these methods are usually limited to evaluate a reduced number of people and body parts (Stephen Bao et al., 2009). Furthermore, the main disadvantage is that the related costs to direct measurement are usually very high, which makes them unpractical in large epidemiological studies on WMSDs or for most ergonomics internships.

Other advanced measure techniques have been developed for posture variation analysis on highly dynamic activities. For this, information is registered as from filming the individual on real time for a representative work time lapse, registering relevant information for its later analysis on specific programs. The analysis can include the use of biomechanical models that use anthropometric and posture information and manipulated load to calculate the momentum and forces between the body segments. The complexity of these models varies from static dimensions to dynamic tridimensional. These techniques are very expensive, require of highly qualified personnel, and are mostly used for workstation and objects design (cars, machinery, plane cabins, etc.), they do not have a practical usage for evaluating existing workstations and are better for the analysis of simulated tasks (Bubb et al., 2006; Chang & Wang, 2007).

Self-report methods are used to collect data on the exposure to physical and psychosocial factor on the workstation, these include work diaries, interviews, and questionnaires (Neville Anthony Stanton, Hedge, Brookhuis, Salas, & Hendrick, 2004), in which the usage of human body maps and varied punctuation scale are frequently used (E. N. Corlett & Bishop, 1976; Sinclair, 1995; Straker, 1999). These methods have the apparent advantage of easy usage, applicable to a broad spectrum of work situations and allowance to show large samples at relatively low costs. As the main disadvantage, it can be mentioned the necessity of large amounts of samples to achieve representativity and that the information obtained through the worker's perception is generally imprecise and unreliable (David, 2005), this approach of self-report has proven to have low validity and reliability levels related to the ergonomic interventions necessities (Li & Buckle, 1999). Nonetheless, ergonomics practitioners frequently use these types of methods on workplace assessments, given the apparent mentioned advantages.

On the other hand, observational methods are of practical use on a broad range of workstations, allow the study of large samples at relatively low costs and their usage usually does not require interrupting work. As main disadvantages, it could be mentioned that score systems are hypothetical, require knowledge and experience from the observer and the possibility of its bias when the evaluation is being executed. Observational methods have been considered a practical tool with a reasonable reliability among epidemiological investigations on WMSDs, for which they have gained popularity amongst safety and health professionals, since they respond better than direct methods and the self-report ones, which usually require time and limited resources and are in need of guides and intervention priority criteria settling (David, 2005; Takala et al., 2010).

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So far, observational methods have had the biggest acceptance among ergonomists, despite having been mostly created for experts to use them (Li & Buckle, 1999; Takala et al., 2010). Furthermore, it is acknowledged that, for the correct application of these methods, specific ergonomics knowledge, experience, and an adequate training are required (Takala et al., 2010); these reasons have restrained its massive usage on the evaluation of workstations/tasks as part of WMSDs prevention.

For example, in Latin-American countries, the amount of experts on the usage of these methods is very limited. However, each time, normative, laws, and government institutions demand and encourage the perform ergonomic assessments of workstations/tasks. From this point of view, it would be worth to ask: How correctly are the ergonomic evaluations being done with the observational methods?

The results from a recent study, which involved 290 professionals from 20 different countries, with a notable representation of Latin-American countries, quantified and confirmed the suspicions that the author of this chapter had about the correct use of these methods. 30% out of the 442 reviewed evaluations presented mistakes (Diego-Mas, Alcaide-Marzal, & Poveda-Bautista, 2017). This study shows a clear alert: We have to take several actions to improve the workplace ergonomic evaluation process, in order to increase the efficiency of occupational WMSDs prevention.

In this case, on an attempt to contribute to attenuate the previous outlook, this chapter's author along with other investigators, starts many years ago the development of an observational method which took into account the necessities, limitations and capacities of non-experts, attempting to answer the workstations ergonomic evaluations demands on real contexts, whilst maintaining acceptable levels of reliability and validity. As a result, the Individual Risk Evaluation (ERIN) method was obtained (Rodríguez, 2001; Rodríguez, Viña & Montero, 2013a, 2013b), which is presented in this chapter, along with reliability, validity and usability method results, as well as a procedure on how the ERIN method can be used during the evaluation and intervention of workstations process, illustrated through an example.

INDIVIDUAL RISK ASSESSMENT: ERIN

Background

ERIN is an observational easy-to-use method, developed so non-expert and low-trained personal can evaluate individuals exposed to risks associated with WMSDs. It was conceived through existent methods, the epidemiologic evidence on WMSDs and the practical needs of non-expert users on the evaluation of WMSDs risk factors exposure on workstations (Rodríguez, 2011; Rodríguez et al., 2013a, 2013b).

ERIN evaluates the trunk, arm, wrist, and neck's posture and their movement frequency; the rhythm, given by the work's speed and the effective duration of the task; the intensity of the effort, result of the perceived effort by the evaluator and its frequency, and the self-evaluation/perception of the referred stress on the subject about the task it is performing (Appendix). On the method, many actions and risk levels are recommended according to the total risk (Table 1), which is calculated summing the seven evaluated variables risks. The used additive model allows to easily identify the influence of each factor and to locate which elements must be intervened to lower the risk level.

The brief time dedicated to the process evaluated with ERIN allows studying a large amount of workstations/tasks on different economy fields, at relatively low costs and without interrupting work. Its application only requires a sheet and pencil, although the previous training and knowledge of the observer will influence its effectiveness.

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Table 1. Risk levels and recommended action according to the total ERIN risk

Zone	Total Risk	Risk Level	Recommended Action
Green	6-14	Low	No changes are required
Yellow	15-24	Medium	Further investigations are needed and changes may be required
Orange	25-34	High	Investigations and changes are required soon
Red	≥ 35	Very high	Investigations and changes are required immediately

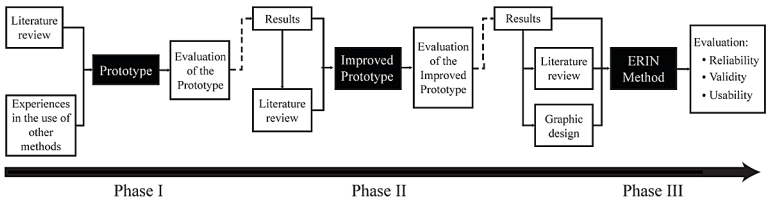
ERIN can be used to evaluate, design, and redesign static and dynamic tasks. Its score system allows establishing low criteria to evaluate the impact of the changes that have been made (before and after), assuming that low scores correspond to more favorable conditions.

The ERIN results can guide the personal dedication to the management and prevention of occupational risks on which changes must be made and towards where. Once the changes are made, the same approach can be used to quickly show to what extent the risks have lowered and the work conditions have improved.

Development Process of ERIN

The ERIN method was developed in three stages: (1) Prototype building, (2) Improvement of the prototype, and (3) Conformation of the ERIN method (see Figure 1).

Figure 1. ERIN method development process diagram
Source: Taken from (Rodríguez, 2011).



On the first stage a prototype of the method is made and tested, and the aspects that should be changed and improved, parting from the obtained results from the experiments and the evaluator's feedback are identified. The second stage was about improving the identified aspects of the prototype regarding the variable, score system, field sheet design and the procedure. This improved prototype was tested on the field and analyzed with the purpose of establishing the elements to be improved. During the third and last stage, the ERIN method conformation is made as a result of the changes done to the improved prototype and the addition of graphic design elements. The main results of the reliability, validity and usability evaluation that were made are presented at the end of the chapter.

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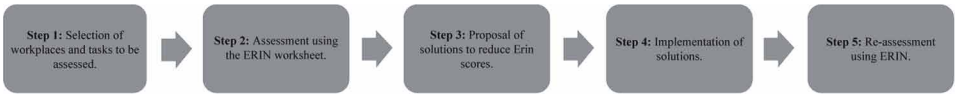
ERIN Guideline of Application

In Figure 2, the ERIN method application process is shown.

Figure 2. ERIN method process application



Step 1: Select the Workstations/Tasks That Will Be Evaluated Within the Company

Although ERIN was conceived to perform massive evaluations on the company, it is very convenient to establish a priority order. For the selection of the workstations to be evaluated, it must be considered the WMSDs statistics, the musculoskeletal symptoms, the worker's opinions, area chiefs, supervisors, and workstation impact on the productive system, among others. The experience and knowledge of the person conducting the research is a factor that favors a correct selection.

Step 2: Evaluate According to the ERIN Field Sheet

In this step, the workstations/tasks of greater risk and that need to be intervened to reduce the WMSDs risk factors are identified. In this case, ERIN is a tool that has been used to set priorities. If during the evaluation non-considered ERIN risk factors are identified (e.g. Vibration, awkward posture of lower extremities), these must be registered for their later study. In brief, the steps within the beginning of the ERIN field sheet (Appendix).

1. Observe the worker and select the critical posture for each body part evaluated (help yourself with text and figures).
2. Add an adjustment in case it corresponds to obtain the postural load.
3. Determine the variable risk given by the postural load and the body part movement; write it down in the corresponding box.
4. Determine the risk value for rhythm, effort and self-evaluation variables according to each table; write it down in the corresponding box.
5. Sum the risk values to obtain the Total Risk.
6. Determine the corresponding Risk Level.

Step 3: Propound Solutions Aimed to Reduce the ERIN Scores

The proposals (engineer, organizational and behavioral) that are performed are based on the evaluation obtained with ERIN, looking to reduce the given scored, at least on the most critical variables. The proposals must be accompanied by the before and after ERIN scores. It is possible that the changes in the variables scores do not lead to reduce the risk level. Nonetheless, a movement focused on improving the

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work conditions from an ergonomic point of view is created. It is highly recommended that the workers participate in the proposals and that these are certificated by a cost-benefit analysis.

Step 4: Implement the Solutions

Within the intervention process, this step has been the most complicated, for the solutions are often not implemented because of the lack of needed resources, or they have not been appropriately justified since the personnel sometimes use the ERIN method but do not possess the right education to justify the proposals in business terms. Fortunately, many times, the cost of the proposals can be ignored, or do not imply any cost at all, which undoubtedly has helped its implementation (Rodríguez & Pérez, 2013a, 2013b).

Step 5: Reevaluate Using ERIN

Once the workstation/task has been modified, it is reevaluated with ERIN. This will allow proving if the changes made were effective in the reduction of WMSDs risk factors exposition.

Annotations for the Correct Use of the ERIN Method

- Sometimes the work is executed with great speed, making difficult to observe some postures. In this case, the observer can ask the worker to simulate the posture for this can be observed in detail.
- In the given case that the body parts evaluated with ERIN (trunk, arm, wrist, and neck) maintain a low variability posture in time, it is recommended to evaluate the posture that is repeated the most for each body part and compare the results with critical postures.
- To evaluate the intensity's effort, two approaches are proposed. The first one is directed to ask the worker/s about the required effort to perform the task one time. This option is highly recommended when the personnel that performs the evaluation possess very to little experience. The second approach is to use the evaluator's criteria. The efficacy of the delegated perception of the effort, performed by non-expert personal has been reported (Dury et al., 2006). Nevertheless, given the high subjectivity required to evaluate this variable, it is recommended to integrate both approaches.
- In case that the task requires performing many types of effort, to sort this aspect out, the highest one performed must be selected and quantified to obtain the effort's intensity variable risk. Since the average's estimation of the effort can be though for non-experts and high force peaks could remain hidden.
- The movement frequency for each body part evaluated must be determined by the number of times said part moves and not by the times the critical posture repeats. This must be estimated by the time the performed work is done with the most intensity.
- The recording of the evaluated tasks is generally suggested, especially for the newcomers or low-experienced in these types of ergonomic evaluations. The use of this technique facilitates the estimation of postures and movement frequency, for the freezing of images and low motion camera use is very easy in video players nowadays. Besides, it allows for the evaluation to be performed at some other time and group. However, the advantages that the recording technique provides must be used carefully to avoid problems like the lack of image stability, insufficient time and cycles, poor workstation overview, frequent zoom-in's and out's, view-blocking objects that diffi-

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cult the observation, and filming from positions that make the observation of body angles difficult (Cochran, Stentz, Stonecipher, & Hallbeck, 1999).

- It is possible that, when evaluating arm and wrists, it will not be evident which side (right or left) is the most affected, in this case, it is recommended to evaluate both sides and chose the one with more postural load, according to ERIN. This meaning that the posture is the aspect that determines which body part is the critical one, regardless of the other body part performing movements with more frequency.
- Sometimes, many people work at a workstation and it is necessary to assign a risk level to the workstation. In this case, it is recommended to select the trend for each of the evaluated variable. For example, let's suppose that seven workers that perform the same task on an assembly line are evaluated. When analyzing the trunk variable posture, two of them adopt a critical posture of 0-20º, for 20-60º and one above 60º. In this case, the critical trunk posture would be determined by the modal value (20-60º). Similarly, this would apply for the rest of the variables, forming the workstation score.
- Frequently, a worker must execute multiple tasks in one work shift. In these cases, the worker's risk is calculated using the following equation:

$$Multi\ \ Task\ \ ERIN = \sum TR_i \times P_i$$

where:

Multi-Task ERIN: Estimated risk for when a worker performs multiple tasks during a work shift.
TR_i: Total i task risk according to ERIN.
P_i: Proportion of the i task effective time, regarding the total tasks time.

If all of the evaluated tasks belong to the same workstation, the calculated risk corresponds to the workstation risk.

In Table 2, it is explained how to perform the multi-task analysis with ERIN.

Table 2. Example of the multi-task analysis with ERIN

Task	ERIN Total Risk	Effective Task Duration (Hours)	Total Time Proportion	Equivalent Task Risk
A	25	4	4/8 = 0.5	25 x 0.5=12.5
B	30	2	2/8=0.25	30 x 0.25=7.5
C	28	2	2/8=0.25	28 x 0.25=7
Total		**8**	**1**	**27**

EVALUATION AND INTERVENTION OF A WORKSTATION USING ERIN METHOD

The following example shows how can the ERIN method be used on the evaluation and improvement of a workstation, following the procedure described previously.

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Selection and Description of the Box-Washing Task (Step 1)

On the workstation, the plastic boxes from the production area of a food product company are gathered. The task is cyclic and consists of the following activities: 1) move a dirty boxes pile to the washing machine, 2) insert three boxes through the washing machine entrance slit, taking one at a time from the pile and inserting them likewise, 3) gather the three clean boxes that come out of the exit canal from below the washing machine, and pile them, one at a time; lastly, 4) move the clean boxes pile to a storage located a few meters away to reincorporate them to the company's productive process. The floor will be permanently wet, for which the pile movement will be accomplished by sliding them. The plastic boxes have an approximate weight of 2.3 kg. Approximately 3 cycles per minute are performed, which is equivalent to 9 boxes per minute.

Evaluation Using the ERIN Field Sheet (Step 2)

Figure 3 shows the evaluation of the plastic boxes cleaning tasks delimited according to the ERIN field sheet. As it is explained at the beginning of the field sheet, the next step is to select the critical posture of the trunk, arm, wrist and neck adopted by the worker during the task cycle and the movement frequency of each body part. On the wrist and arm's case, the observer must choose which side, left or right, represents the highest postural risk. In case of any doubts, both sides are evaluated and the highest risk, according to ERIN, is chosen.

On Figure 4 it can be observed that the trunk's critical posture occurs the moment the worker has to reach the clean boxes coming out of the washing machine. The trunk is severely flexed (over 60º), which belongs to a score of (3), and it is also rotated, meaning an adjustment of (+1). Therefore, the trunk's postural load is 3+1=4. The trunk's movement during the task is "very frequent", more than 10 times/min. obtaining a score of 9 for the *Trunk*.

Figure 5 shows that the shoulder/arm critical posture occurs when the worker takes the dirty boxes placed on the piles upper side to introduce them in the washing machine, being the right arm the highest riskier. A similar situation is presented when the worker places the clean boxes on the upper side of the pile. The arm is severely flexed (over 90º), which belongs to a score of (3) and it is abducted, meaning an adjustment of (+1). Thus, the arm's postural load is 3+1=4. The arm's movement during the task is "very frequent" (almost a continuous movement), obtaining a score of 9 for the *Arm*.

Figure 6 shows that the shoulder/arm critical posture occurs when the worker is inserting the dirty boxes in the washing machine. The right wrist is severely extended (over 45º) which belongs to a score of (2) and is deviated (+1), plus the hand is holding the boxes (static object press) for longer than the cycles 50% of the time (+1). It must be mentioned that there are other moments during the task execution where the wrist performs flexo/extensions higher than 45º. Therefore, the wrist's postural load is 2+1+1=4. The right wrist's movement is "very frequent", more than 20 times per minute, obtaining a score of 6 for the *Wrist*.

Figure 7 shows that the neck's critical posture occurs when the worker is reaching for the clean boxes coming out of the washing machine. The neck is severely extended (over 20º), which belong to a score of (2), plus it is rotated, meaning an adjustment of (+1). Therefore, the neck's postural load is 2+1=3. The neck's movement during the task execution is "constant", obtaining a score of 7 for the *Neck*.

To accomplish the assigned load during the workday, the worker executes the activities at a "normal work speed" and requires approximately 7 hours of effective work, obtaining a score of 3 for the *Rhythm*.

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The intensity of the effort, given by the muscular effort required to execute the task one time (taking a box from the pile and putting it in the washing machine/ taking a box from the machine's output and pile it), is considered by the worker as "something hard" and has a frequency higher than 10 times per minute, obtaining a score of 6 for *Effort's intensity*.

On this workstation, only one worker labors and he has perceived the task as "little stressing", which belongs to a score of (1) for *Self-evaluation*. Finally, the variable risks scores are added and a total risk of 41 is obtained, corresponding to a "very high" level risk. This indicates that it is required to make immediate changes.

Improvement Proposals Based on the ERIN Evaluation (Step 3)

With the purpose of reducing the exposition to WMSDs related risk factors, parting from the ERIN evaluation, three improvement proposals are made.

Proposal 1: Redesign the actual washing machine. The redesign would imply to modify the clean boxes output' slit height, rising it to the same level of the input slit (Figure 8 and Figure 9). This modification would avoid that the worker flexes the trunk (over 60º) and the rotation/inclination during the clean boxes pick up. This proposal implies the hiring of another worker to pick up the clean boxes coming out of the output slit, which implies an additional cost. This way, the workload is divided into two workers and two sub-tasks would be created, where similar activities would be executed (same risk exposure).

Proposal 2: In case the washing machine modification is not possible (Proposal 1), then it is recommended to hire another worker to pick up the clean boxes coming out of the output slit, located on floor's level (actual situation), but on the contrary side to where they are introduced to the washing machine. On this case, two sub-tasks would be created, each one executed by a worker: A) input of the dirty boxes on the washing machine and B) pick up of the clean boxes. This way, the workload would be divided between two workers, making a rotation between sub-tasks possible.

Proposal 3: Consists of modifying the work method. Actually, the worker stashes around 30 boxes, which causes the pile's height to notably rise, causing the worker to labor over the shoulder's height (shoulder/arm flexion over 90º), therefore, it is recommended to work with piles of 15 boxes, reducing the height to half of it and the shoulder/arm's flexion angle to 45-90º- The implementing of this proposal does not require an additional cost.

Re-Evaluating With ERIN to Measure the Proposals' Impact (Step 4)

Table 3 shows the variable ERIN method risk for the actual situation, and the projected for the integrated proposals.

As for the trunk's frequency movement, both of the integrated proposals group would reduce it from very frequent (over 10 times/min.) to frequent (5-10 times/min.) for both sub-tasks. Given the approximate production rhythm of 9 boxes/min., just one worker would perform around 18 flexions/min., for two trunk flexions are performed for the box, one when the dirty box is taken from the pile to insert it and another when the clean box is picked up from the washing machine.

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Figure 3. Evaluation of the box-washing task with ERIN method

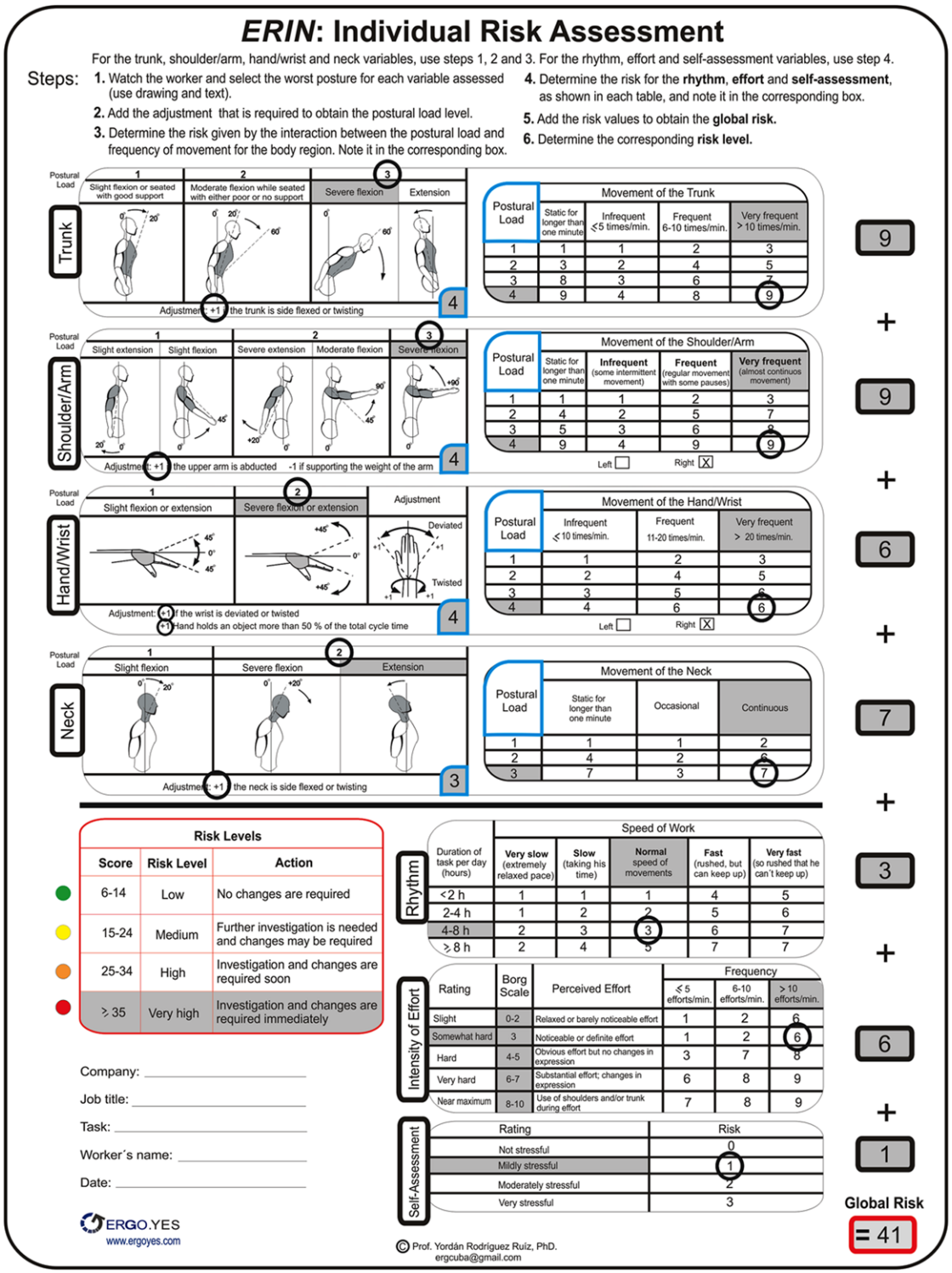

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Figure 4. Trunk's critical posture on the box-washing task

Figure 5. Shoulder/arm's critical posture on the box-washing task

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Figure 6. Wrist's critical posture on the box-washing task

Figure 7. Neck's critical posture on the box-washing task

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Table 3. Proposals impact projection on ERIN method's scale

ERIN Method Variables	Actual Situation	Proposal 1 + Proposal 3	Proposal 2 + Proposal 3	
			Sub-task A	Sub-task B
Trunk	9	6	6	9
Arm	9	7	7	7
Wrist	6	6	6	6
Neck	7	6	6	7
Rhythm	3	2	2	2
Effort's intensity	6	2	2	2
Self-evaluation	1	1	1	1
Total risk	41	30	30	34
Risk level	**Very high**	**High**	**High**	**High**

In the two integrated proposals groups, the division of tasks causes a reduction of effective time, reducing it from 7 hours to 3.5, which implies a reducing of the Rhythm variable score from 3 to 2 points, for the work speed, would still be "normal".

Proposal 3 solely affects the arm's postural load, but not its movement frequency. This reduces the arm's score from 9 to 7 points.

As Table 3 shows, the sub-task B risk is higher than sub-task A, for the severe flexion movements (over 60º), the trunk rotation, and the neck's extension and rotation remain at the time of the clean boxes pick up of the output slit on floor's level.

In regard to the trunk's posture, it must be mentioned that, even though the proposals cut out the sever flexion (over 60º) and the trunk's rotation during the clean boxes pick up, the worker continues to perform trunk rotations over 60º during the pick up and stashing of the boxes from floor to pile. For said motive, the trunk's score only reduces from 9 to 6 points, meaning an aspect to improve with other intervention proposals.

Implementation and Tracing (Step 5)

It is left to the company's decision-makers' consideration which actions to implement. In these cases, the ergonomist or professional in charge must qualitatively and quantitatively offer the potential benefits that are generated on the health, security, productivity, and quality indicators. Involving from the beginning of the intervention process the different interested actors (ej. Workers and directives), facilitates the implementing process, for they feel involved in the proposed solutions.

Additional Commentaries

As it was previously showed (Table 3), despite the reduction of the total 41 points score (very high-risk level) to 30 points (high-risk level), the task remains a high risk, according to ERIN. This proves that the improvement process of the workstations/tasks is gradual, and how it gets difficult and the costs rise when the ergonomic principles are not taken into account from the design phase (Hendrick, 2008).

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Finally, it must be highlighted the importance of multiple measures integration, in order to reduce the exposition, for in many cases just one measure does not manage to positively impact on every aspect of the workstation/task to intervene, and thus reduce the exposition of WMSDs related risk factors.

Figure 8. Washing machine redesign proposal

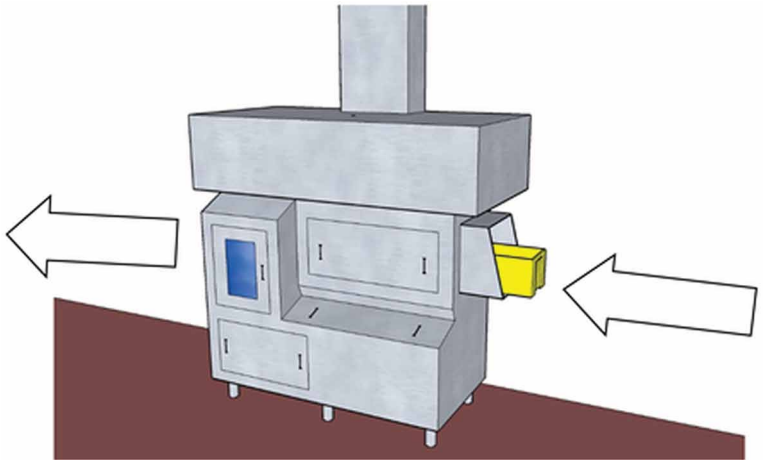
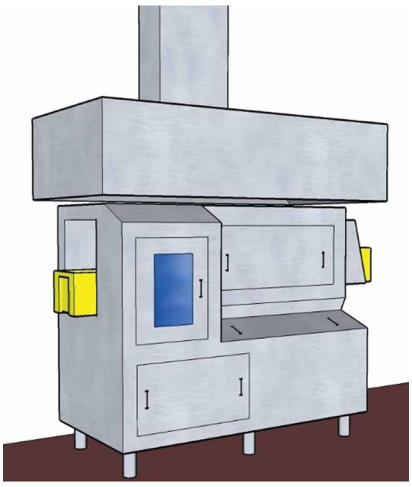


Figure 9. Washing machine redesign proposal



RELIABILITY, VALIDITY, AND USABILITY

Many studies have been executed to evaluate the reliability, validity, and usability of the ERIN method. Following, the main results are described and presented (Rodríguez, 2011).

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Inter-Observer Reliability

Study Description

A group of 42 subjects evaluated with videos and the ERIN's field sheet, seven tasks selected from the industry. In the selection, it was evaluated the variety of the tasks, and the representativity of different industry fields, filming quality, corporal angles visibility from different perspectives, standing, and seated tasks, and repressing of complete work cycles. The video projection was random, one at a time and the projection was repeated until each observer was done with the evaluation, in order to proceed to the next video. It must be mentioned that the evaluators could not stop the video. The participants were classified as non-experts, for they had not performed WMSDs risk evaluations before.

With the purpose of analyzing the training time influence, half of the evaluators received 3 training hours, whilst the other half received 6.

Methodology

For the dichotomic variables, the statistic ICC (KR-20) was used. For the remaining variable, which scale is ordinal, the statistic ICC (2.1) was used employing the individual measures and complete agreement (McGraw & Wong, 1996; Shrout & Fleiss, 1979). The results were interpreted as follows: if the ICC < 0l40, the reliability is poor; if the ICC is between 0.40 and 0.75, the reliability is moderated to good; and if the ICC > 0.75 the reliability if excellent (Stephens, Vos, Stevens, & Steven Moore, 2006; Stevens, Vos, Stephens, & Steven Moore, 2004). Additionally, in the ordinal scale variable, it was used as an agreement measure the Kendall's concordance coefficient. This coefficient can vary from 0 (no association) to 1 (perfect association). The agreement levels measured with W are interpreted as follows: poor association $0.0 < W < 0.6$; moderate association $0.6 < W < 0.7$; good association $0.7 < W < 0.8$ and strong association $0.8 < W < 1.0$ (Lee & Ferreira, 2003).

Results and Analysis

It was obtained that the dichotomic variables (trunk adjustment, arm adjustment, wrist posture, neck adjustment and neck posture), presented the value of ICC (KR-20) over 0.75, indicating an excellent agreement among the evaluators. On the wrist adjustment evaluation (deviation or rotation) the agreement was poor according to the ICC (KR-20) = 0.081.

The agreement values varied more on the ten ordinal variables (trunk's posture and movement, arm's posture and movement, wrist's movement, neck's movement, work speed, effort, movement frequency and risk levels) than in the dichotomics.

In the trunk's posture evaluation, the agreement was excellent, according to the ICC (2.1) = 0.768, and the Kendall's coefficient of 0.807. In the variables evaluation: trunk's movement, arm posture, and effort, the agreement level is moderated to good since the ICC (2.1) values vary between 0.574 and 0.728, and the Kendall ones between 0.638 and 0.755. In the arm, wrist, and frequency movement, effort and work speed evaluation a poor agreement coefficient was obtained. The ICC (2.1) values vary from 0.088 to 0 0.298, and the Kendall's coefficient from 0.134 to 0.359.

In the total risk variables (obtained when summing the risk per variable) and the risk level (obtained when categorizing in one out of four levels the total risk value), the agreement was from moderate to

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good, with ICC (2.1) values of 0.465 and 0.471 respectively. When establishing two categories to evaluate the risk level: the first was a result of grouping up the risk levels "low" and "medium" in the category "low risk", and the second a result of grouping risk levels "high" and "very high" on the category "considerable risk", with the purpose of analyzing the agreement obtained when using the ERIN method to solely detect if there is a risk at all, it gives out that the ICC (KR-20) is 0.944, indicating an excellent reliability, and thus that the method is adequate for this purpose.

The agreement indexes were usually higher for the evaluator's group that received a higher training time, although in this study the differences were not big enough to give out definitive criteria on the influence of this factor. Nonetheless, the obtained results support the idea that if it is desired to raise the reliability, the training time must be raised as well (Takala et al., 2010).

Overall, the inter-observer reliability was moderated to good, since out of the 17 variables studied, 7 showed an excellent agreement, 5 moderate to good, and 5 poor. If in the variables where ICC (2.1), among which the five poorly agreed reported ones are, had used the average indexes, the evaluator's mistake impact would have been lower regarding the reliability indexes. As it was expressed, the average ICC's measures provide higher reliability indexes than individual indexes. A study that uses the average measures, must provide higher indexes than the calculated on this research (Shrout & Fleiss, 1979).

Lastly, it should be noted that if the evaluators had had the opportunity to stop the video or use the slow motion during the evaluations, as it is usually done nowadays, it is possible that higher agreement levels would have been reported in this study.

Intra-Observer Reliability

Study Description

A group of 17 subjects using the ERIN field sheet evaluated on two occasions a total of seven industry-selected tasks. The elapsed time between the first and second evaluation was three weeks.

Methodology

The statistics ICC (KR-20) and Cohen's Kappa were used for the dichotomic variables. The statistics ICC (2.1) and Spearman correlation coefficient were used for the ordinal scale variables. The interpretation of the ICC categories is the same as the explained for the inter-observer reliability analysis, and for the Cohen's Kappa values it is based on the Landis and Koch criteria cited by (Burt y Punnett, 1999), poor $K < 0.0$; light $0.0 < K < 0.2$; regular $0.2 < K < 0.4$; moderated $0.4 < K < 0.6$; substantial $0.6 < K < 0.8$, and almost perfect from $0.8 < K < 1$. The interpretation of the Spearman correlation values was: over 0.7 strong relation, between 0.3 and 0.7 a medium strength relation, and below 0.3 a weak relation (Li, Rosenthal et al, 1996).

Results and Analysis

It was obtained that for the dichotomic variables (trunk's adjustment, wrist posture, neck's adjustment, neck's posture) parting from the ICC (KR-20) and Cohen's Kappa statistics, showed a reliability level from moderate to good, and moderated, respectively.

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On the wrist adjustment variable, the agreement was poor according to the statistical methods, coinciding on the obtained results on the inter-observer reliability study and other reported in the literature about the low-reliability levels on the smaller body areas evaluations, as is the wrist's case.

Out of the studied ordinal variables, three are classified as of excellent reliability, considering the ICC (2.1) values and the Spearman correlation coefficient, which varied between 0.786 and 0.833, and between 0.784 and 0.83, respectively. Five showed a moderated to good agreement, according to the ICC (2.1), with values between 0.416 and 0.676, and a medium according to the Spearman coefficient with values between 0.401 and 0.677.

It was only found a poor or low agreement on two variables. The first case was the wrist's movement, with a 0.256 value, according to the ICC (2.1), and 0.22, according to Spearman, coinciding with the expressed about the complexity of observation on this body part. In the case of the neck's movement, the agreement was poor, according to the Spearman values of 0.305, and an ICC (2.1) of 0.31.

Overall, the intra-observer reliability behaved moderated to good, for out of the 16 studied variables, 10 presented a moderate to good agreement, 3 excellent, and 3 poor.

Validity

Study Description

Study 1: The evaluation of seven tasks taken from videos by 42 observers, with three experts defined pattern were compared. These experts had the possibility of stopping the videos, freezing the images to observe the postures in detail, interchange criteria and reduce the speed of the film's projection. This procedure was established to reduce the present mistake on the observational processes.

Study 2: The evaluation of two workstations realized out of videos by 8 health field professionals (doctors and traumatology, physiology and rehab specialists), with three experts defined pattern were compared. It must be noted that these professionals had no experience on the usage of ergonomic evaluation methods, but they did on related subjects. The evaluators received an hour of training on the usage of the ERIN method.

Study 3: The obtained risk levels when evaluation 32 workstations with ERIN, RULA, and REBA methods were compared (Rodríguez, 2011). The RULA and REBA methods were selected among the existents because of the coincidences regarding the evaluated body zones, and ERIN related risk factors that propose a final risk level, result of the combination and consideration of the evaluated risk factors that have been used since many years ago on the workstations evaluation. Two observation strategies were employed for the evaluation: the critical posture, and the most common.

Methodology

Study 1 and Study 2: The total percent agreement was calculated, as well as the percentage with one and two or more different categories between the expert-given value, and the non-expert evaluators, for each of the 17 analyzed variables.

Study 3: Four levels were defined (low, medium, high, and very high). On the REBA method case, five risk level classification categories (Hignett & McAtamney, 2000), for which, in order to establish the comparison between the methods, categories 1 and two were grouped in the low level, remain-

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ing four categories as ERIN and RULA. To study the agreement level, according to the different methods, ICC (2.1) and percent agreement indexes were calculated.

Results and Analysis

Study 1: Out of the studied variables, 12 presented percent agreement above 60%. Out of these, five obtained values above 70%. Five variables presented percent agreement values lower than 60%, out of which four are related to the movement frequency estimation of the body parts (trunk, arm, wrist, and neck). These results correspond to the low-reliability indexes reported on these variables. Therefore, it is evident that the determination of the body parts movement frequency in real time is an aspect that the non-expert evaluators find difficult. The cases where the evaluations differed in more than one category were low, between 1 and 6%. Mostly coinciding with the lower total percent agreement variables previously referred.

Study 2: All of the variables, except the wrist and neck movement with percentages of 63%, presented total percent agreement above the 70%. Out of the 17 studied variables, 12 presented values above the 80%, and out of these, four were superior to 90%. No variable differed on more than one category. All of the above indicates that expert personnel with less than an hour of training is capable of offering validate and consolidate results when employing ERIN in workstations evaluation.

Study 3: The agreement between ERIN and RULA methods was, for the critical posture, of an ICC (2.1) = 0.403, and a percent agreement of 56%, as for the most common posture had an ICC (2.1) = 0.457, and a percent agreement of 56%. The agreement between the ERIN and REBA methods for the critical posture was of an ICC (2.1) = 0.554, and a percent agreement of 66%, as for the most common posture had an ICC (2.1) = 0.556, and a percent agreement of 59%. It was proposed that, regardless of the employed observation strategy, when using ERIN instead of RULA or REBA, the agreement regarding the final risk level is moderated to good. Nevertheless, the characteristics, strengths, and weaknesses must be analyzed in each of these methods when selecting them to evaluate a given situation (e.g. Personal that will use it, a dynamic or static task, involved body parts, among others).

On ERIN's predictive validity, until now no studies have been reported. To date, ERIN has been applied to the ergonomic evaluation of dissimilar workstations in different countries (Brazil, Canada, Cuba, Colombia, Mexico, Panama, Ecuador, India, China, Peru, among others). The evaluators, workers, and other interested subjects that have used it have considered it a useful and practical tool. This translates as ERIN having a good preliminary validity "face validity", as well as in contexts where many ergonomics-related situations must be solved, like in developing countries (Latin-Americans), the preliminary validity gains importance.

Usability

Study Description

Study 1: To a 42-subject group, classified as non-experts, after evaluating 7 video-projected tasks with the ERIN method, an instrument to evaluate ERIN's usability was provided. This instrument is a modification of one that was developed to measure the usability of informatics programs (Neville

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A Stanton & Young, 1999). As part of the usability study, the time that each subject took on each task evaluation was registered too.

Study 2: Like in the study described above, a group of 8 health field professionals was provided with an instrument designed to evaluate ERIN's usability, after evaluating two tasks. The evaluators received an hour of training previous to the ERIN method's usage.

The evaluation of two workstations realized out of videos by 8 health field professionals (doctors and traumatology, physiology and rehab specialists), with three experts defined pattern were compared. It must be noted that these professionals had no experience on the usage of ergonomic evaluation methods, but they did on related subjects. The evaluators received an hour of training on the usage of the ERIN method.

Methodology

Study 1 and Study 2: Table 4 shows the used tool which consists of 10 questions focused on exploring the following aspects: easy learning, little training time, needed time to realize the evaluation and applicability on a varied group of tasks (dynamic and statics). Starting from the tool, the usability index was obtained, varying from 0 to 100 points. This index is calculated when subtracting the value one to each answer of the odd questions and subtracting the value five of the answer to the even questions; next, the ten obtained values are summed and multiplied by 2.5.

Table 4. Format used to measure the ERIN's method usability

In case of the answer you consider taking into account that the analysis is different for even questions (2,4,6,8,10) and odds (1,3,5,7,9).					
	Total Disagreement				**Total Agreement**
1. ERIN is easy to use.	1	2	3	4	5
2. ERIN's evaluation takes too much time.	1	2	3	4	5
3. ERIN allows evaluating a broad range of tasks.	1	2	3	4	5
4. ERIN requires the help of specialized personnel.	1	2	3	4	5
5. Most people will learn to use ERIN quickly.	1	2	3	4	5
6. I need to learn many things to use ERIN.	1	2	3	4	5
7. I feel safe when using ERIN.	1	2	3	4	5
8. I find the tool difficult to use.	1	2	3	4	5
9. The ERIN's field sheet design facilitates the usage of the tool.	1	2	3	4	5
10. The terms used in ERIN are confusing.	1	2	3	4	5

Source: Built from (Neville A Stanton & Young, 1999)

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Results and Analysis

Study 1: The usability index varied among 60 to 100 with an average of 80, and a deviation of 10. The results show that the practical value of the method, according to the user's criteria is high. Additionally, the agreement between the evaluators was analyzed, when responding the questions related to usability. To analyze the agreement among the subjects when answering said questions, the ICC (2.1) was calculated with 0.642 individual indexes and 0.987 averages. Indicating a regular to god agreement for each individual and excellent for the group (Stevens et al., 2004).

The average evaluation time per task was 6.5 minutes, with a tendency to reduce as more evaluations were being done. This was presumably due to the familiarization of the evaluators with the method.

Study 2: The usability index varied among 62.5 and 92.5 with an average of 84 and a deviation of 12. The results show that the method's practical value is high. To analyze the agreement among the professionals when answering the asked questions, the ICC (2.1) was calculated with an individual index of 0.747 and 0.947 average. Indicating an agreement very close to excellent for each individual and excellent for the group. Therefore, the obtained agreement for the usability usage was excellent.

ERIN SOFTWARE

To ease the ERIN method's application, a free-access online application has been developed (Figure 10 and Figure 11), in English as well as in Spanish, and the ERIN 1.7 software (Figure 12 and Figure 13), that allows storing the evaluations, generating reports and making recommendations according to the evaluation's results.

Figure 10. Online application to evaluate using the ERIN method
Source: www.ergoyes.com

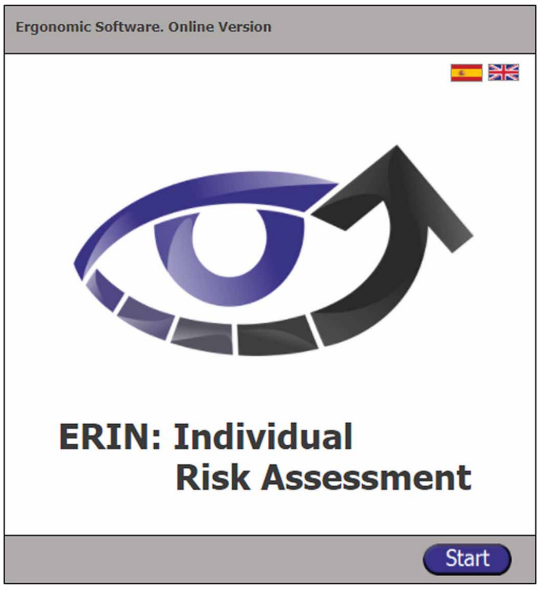

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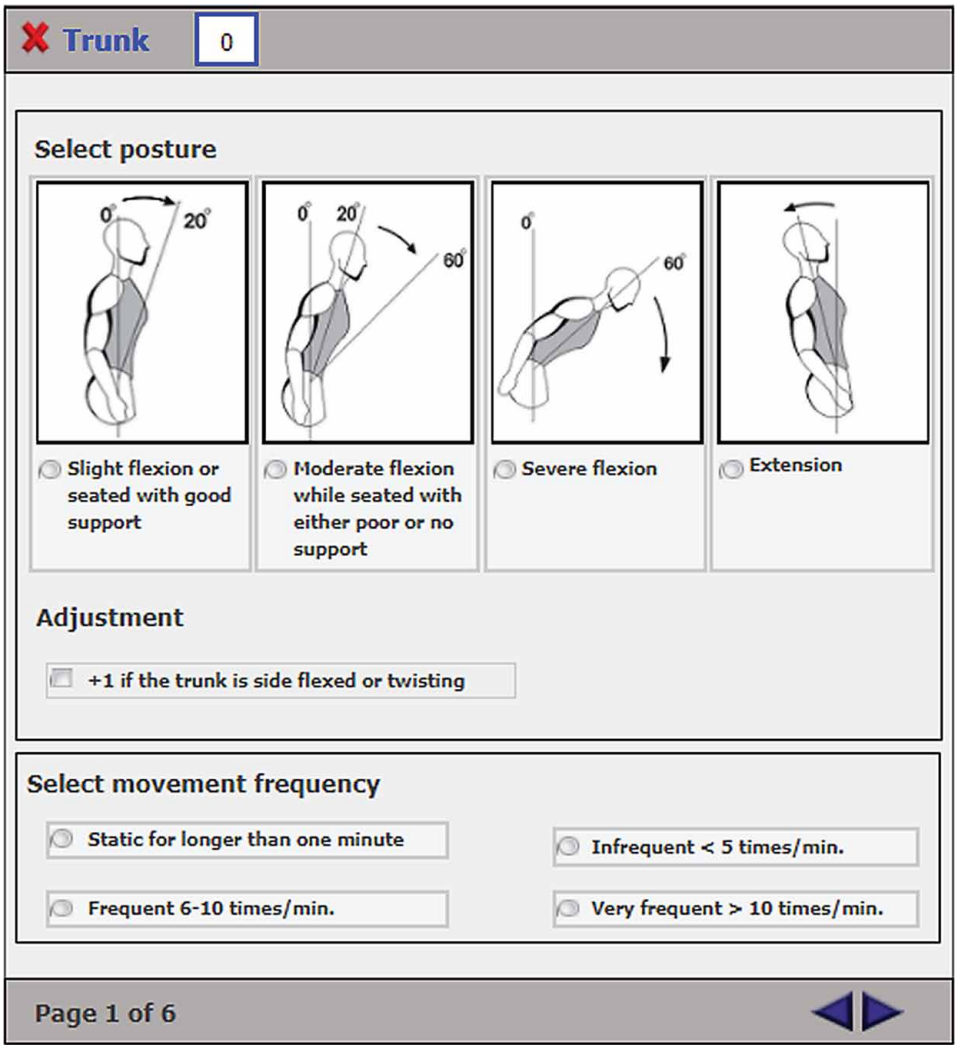
Figure 11. Online application to evaluate using the ERIN method
Source: www.ergoyes.com



FUTURE RESEARCH DIRECTIONS

Nowadays there is a higher interest for the approximation of a real evaluation on the exposition of real people to WMSDs risk. This is an extremely complex phenomenon given the multi-factor origin of these diseases, and how hard it becomes to control all of the risk factors present in the work environment, as well as outside of it. Some authors have presented other paradigms, where they highlight the necessity of a broaden vision to act beyond the workstation, on the hope of a bigger impact (Punnett et al., 2009). In my opinion, this philosophy will gain strength over the years, although I must point out that it will find many barriers, mainly on sub-developed countries, where there are more urgent political, economical, and social problems to solve.

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Figure 12. Software ERIN 1.7 for the ergonomic evaluation of the workstations
Source: www.ergoyes.com

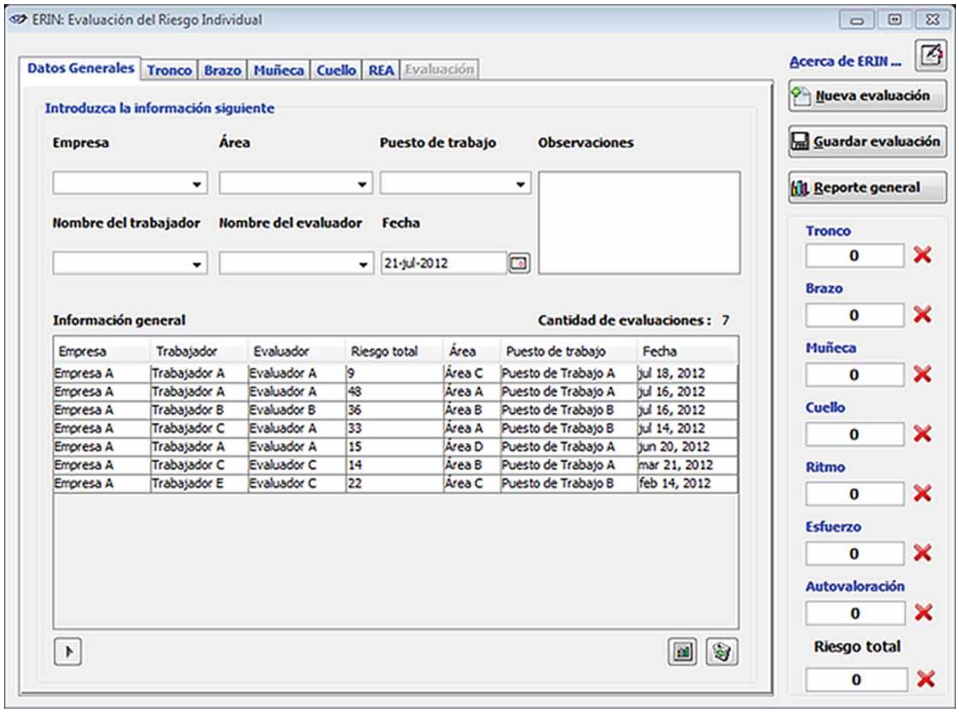
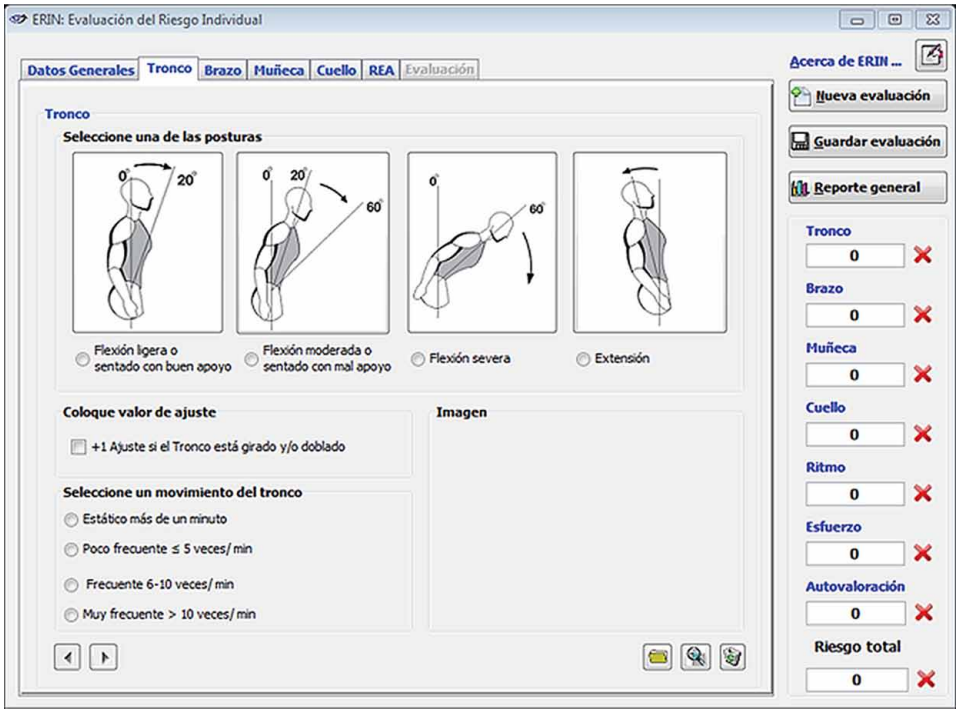


Figure 13. Software ERIN 1.7 for the ergonomic evaluation of the workstations
Source: www.ergoyes.com



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Although the race for the risk factor's evaluation perfectionism must not stop and will surely be an impulse by the incessant technological developments, the professionals and ergonomic-field researchers must increase their attempts to improve the effectiveness of the intervention and transformation process of the workstations and systems, under a systemic ergonomic perspective. As of today, it is very common to find workstation evaluation courses, but very few on how to intervene the workstations and systems. Expressing it differently, only by evaluating we are not going to change the actual overview that we have in regard of WMSDs, we must step into actions. In order to do so, the future development and perfecting of the ergonomic evaluation methods must find a balance between the effort dedicated to evaluating and the utility of the intervention results.

CONCLUSION

The ergonomic methods available to evaluate the exposure to WMSDs risk factors have been mostly developed for specialized personnel that also has experience in said activities can use them. This has made the massive evaluation of workspace/tasks very difficult in many countries as part of the primary preventive actions of these diseases since the existence of this personnel is limited. For said reason, the creation of tools and practical methods is necessary, for them to be correctly used by non-expert personal and to favor the evaluation-intervention process. With ERIN it is hoped to lower this problem, given the fact that it has proven to have an acceptable level of reliability and validity, as well as a great acceptance among professionals that perform ergonomic evaluations on real contexts since its use requires low training, sources and time.

ACKNOWLEDGMENT

Gratitude to professors Silvio Viña Brito and Ricardo Montero Martínez for their company during the ERIN method development process, and to Elizabeth Pérez Mergarejo for her valuable input on the conforming of this chapter.

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KEY TERMS AND DEFINITIONS

Ergonomic Intervention: Changes directed towards the improvement of a task, workstation, or work system from the ergonomic perspective.

Ergonomics Assessment: Testing on the fulfillment of the principles and approaches that ergonomics promotes.

Inter-Observer Reliability: Consistency grade reached for various observers when evaluating a given situation using the same method.

Intra-Observer Reliability: Consistency grade reached by an observer when evaluating at least twice, given a situation, with the same method.

Linguistic Descriptors: Word used to describe the movement range and the frequency of the body parts movement.

Task: Group of actions that are executed to achieve a determined goal.

Usability: Magnitude in which a method is considered simple, easy to use and learn, and applicable to varied situations in real contexts.

Validity: Grade in which a method or tool measures what it is supposed to measure.

Workplace: Workspace where many worker-assigned tasks are executed.

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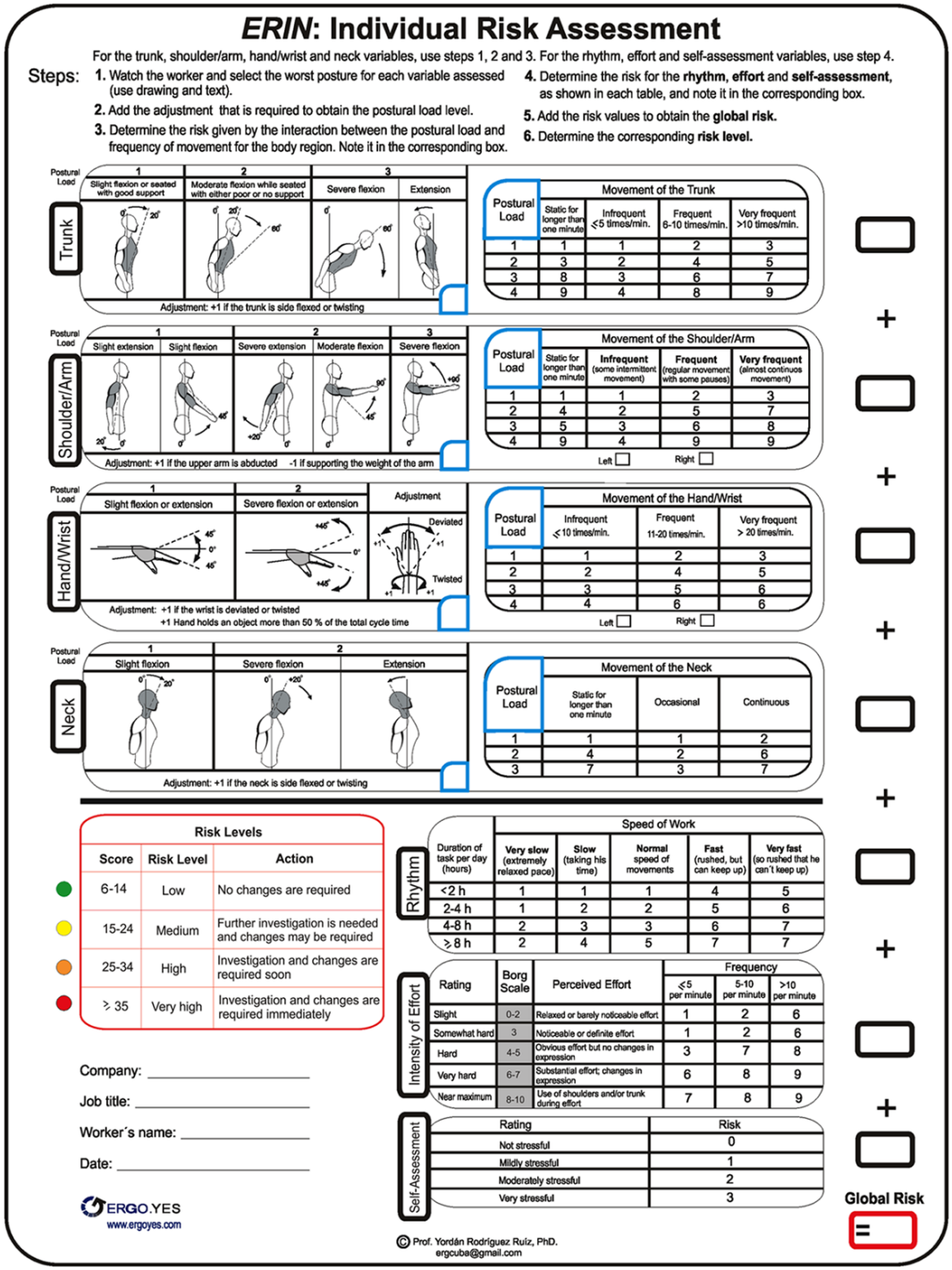
APPENDIX

Figure 14 shows the ERIN worksheet.

Figure 14. ERIN worksheet



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Chapter 78
Prevalence of Musculoskeletal Disorders of Odisha Farmers in Selected Agricultural Tasks:
A Critical Analysis During Seeding, Fertilizing, and Weeding of Crops

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ABSTRACT

In the chapter, there are dual main contributions. In the first phase, based on the extensive review of literature on the application of cuckoo search (CS) methodology, its application for the optimization of agricultural pesticide sprayers for maximum efficiency was suggested. In the second phase of study, 75 farmers of Odisha in India were considered to assess their musculoskeletal disorders (MSDs) during seeding, fertilizing, and weeding of crops using a Standardized Nordic Questionnaire with a five point rating scale (i.e., 1 = Very less, 2 =Less, 3 = Nil, 4 = Strong, 5 = Very Strong). Factor analysis was performed for "seeding, fertilizing, and weeding characteristics," "economical characteristics," and "tools and equipment characteristics of farmers." Then Pearson correlation coefficient matrix was generated for the seeding, fertilizing, and weeding characteristics of farmers, followed by regression analysis for the economic characteristics of farmers.

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INTRODUCTION

Agriculture has been considered as the source of livelihood for most of the Indian families. Its contribution is about 18% of the gross domestic product in India (Department of Agriculture, Cooperation & Statistics, 2014). Similarly agricultural sectors in India also largely contribute to 49% of the total labor force. Most of the Indian spends more than half of their income in food-preservation & security (NSSO, 2013). However, the growth rate of the agricultural sectors in India has been fluctuating and it depends primarily on the rainfall, as most of the cultivating area in India depends on rainfall (Dev, 2013). Farming is also greatly influenced by the techniques and tools used in various stages and activities involved. Though with the development of machinery and equipments, the farming process has become easier, more efficient and productive; still most of the farming activities are carried out by the conventional tools and techniques.

As most of the engineering problems are solved by optimization techniques where the goal is to determine either a maximum or a minimum value of the problem being solved generally known as the objective function. However, for solving the global optimization problems, the Cuckoo Search (CS) method is considered as the most powerful nature-inspired algorithm. It is inspired by the breeding behavior of some cuckoo species, and because of the simplicity & more performing efficiency, the Cuckoo Search method has been applied to various optimization problems in the engineering problems including the agricultural sectors.

Cuckoo Search Method

Cuckoo search is a meta-heuristic algorithm inspired by the bird Cuckoo; these are the "Brood parasites" birds. It never builds its own nest and lays their eggs in the nest of another host bird nest. Cuckoo is a best-known brood parasite. Some host birds can engage directly with the intruding cuckoo. If the host bird identifies the eggs that are not their egg then it will either throw that eggs away from its nest or simply rid its nest and build a new nest. Each egg in a nest represents a solution, and a cuckoo egg represents a new solution. The aim is to use the new and potentially better solutions (cuckoos) to replace a not-so-good solution in the nests. In the simplest form each nest has one egg of cuckoo, in which each nest will have multiple eggs representing a set of solutions.

CS is based on following idealized rules (Yang & Deb, 2009)

1. Each cuckoo lays one egg at a time, and dumps its egg in a randomly chosen nest;
2. The best nests with high quality of eggs will carry over to the next generation;
3. The number of available host's nests is fixed, and the egg laid by a cuckoo is discovered by the host bird with a probability P Є (0, 1). Discovering operates on some set of worst nests, and discovered solutions dumped from farther calculations.
4. Levy Flight is used when new solution is derived from the old one to attain realistic approach.

Based on these rules, the possibility is the host bird can either throw the egg away or abandon the nest, and build a completely new nest. For simplicity, this last assumption can be approximated by the fraction P_a of the n nest is replaced by new nests (with new random solutions). An important issue of Cuckoo Search is the applications of Levy flights for generating new solutions, $X_{(t+1)}$ which is given by equation (1):

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$$X_{(t+1)} = X_{(t)} + s\,E_{(t)} \tag{1}$$

where, $E_{(t)}$ is drawn from a standard normal distribution with zero mean and unity standard deviation for random walks, or drawn from Levy distribution for Levy flights. Then, the random walks can also be linked with the similarity between a cuckoo's egg and the host's egg which can be tricky in implementation. Then the step size *s* determines how far a random walker can go, for a fixed number of iterations. Additionally in certain condition where *s* is too large, then the new solution generated will be too far away from the old solution (or, even jump out side of the bounds). Then, such a move is unlikely to be accepted. If *s* is too small, the change is too small to be significant, and consequently such search is not efficient. So a proper step size is important to maintain the search to be as efficient as possible.

Cuckoo Search Algorithm

The algorithm can be extended to more complicated cases in which each nest has multiple eggs representing a set of solutions.

The pseudo code defined algorithm by Yang and Deb (2009) is as follows,

```
Generate initial population of n nests x_i, i = (1, 2. . . n)
for i = 1: n
Determine fitness value F_i = (x_i)
end for
while (stopping criterion is not satisfied)
Generate a cuckoo egg (x_j) from random nest by L´evy flights
Determine fitness value F_j= (x_j)
Select a random nest i
if F_j > F_i then
x_i ← x_j
F_i ← F_j
end if
Abandon a fraction p_a of the worst nests
Build new nests by L´evy flights
Compare fitness of new nests and keep best nest
end while
```

Application of Cuckoo Search in Agricultural Pesticides Spraying

Pesticides are substances which are used mostly to protect plants or crops from weeds, insects or fungi in agricultural sectors. Most of the farmers use the pesticide sprayers to apply the pesticides and fertilizers on agricultural crops. As the farmers can't afford to lose their crops due to insects so they spray chemicals, pesticides, on them which repel the insects also prevent diseases from spreading. So using pesticides reduces the risk of losing crops of the season. One of the most important considerations when using the sprayer is optimization of the spray. As the Cuckoo search (CS) method, has been successfully used by different researchers and authors in different optimization applications which includes but not limited to systems design, electricity network operation, electricity generation, wireless communications

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routing and minimization of energy losses during electricity transmission (Belic et al., 2017; Koppel et al., 2017; Platonov, 2016; Das et al., 2017; Yan et al., 2017; & Parkinson et al., 2013). Figure 1 shows the use of Pesticides Sprayer in agricultural sectors.

Figure 1. Use of agricultural pesticides sprayer

From the Figure 2, it is clear that the Cuckoo Search (CS) algorithm has been successfully applied in major categories such as in Engineering, followed by Pattern Recognition, Software Testing & Data Generation, Networking, Job Scheduling, and Data Fusion & Wireless Sensor Networks. Yildiz (2012) have used Cuckoo search (CS) method for selecting the most favorable parameters in milling-operation. Chifu (2012) have used Cuckoo search method to optimize semantic web-service composition process. Kumar et al. (2011) have obtained the optimum design for a 'reliable embedded-system'. Yang and Deb (2010) have proposed a new technique of Cuckoo Search to solve the engineering-design optimization problems, where the objective is to minimize the spring weight and overall fabrication cost, for springs & welded beam structures. Mareli et al. (2017) have investigated the CS algorithms performance by dynamically increasing switching parameters. They developed three CS algorithms using linear, exponential, and power increasing switching parameters, and tested them against the constant & linearly decreasing CS algorithms. It was found that the CS using exponential increasing switching parameter was more efficient than other CS algorithms.

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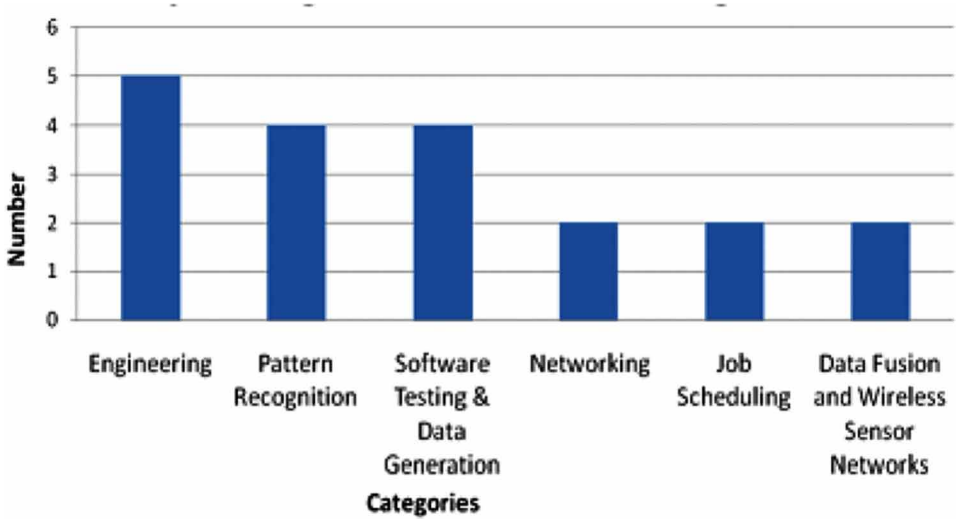
Figure 2. Main categories in Cuckoo Search algorithm
Source: Mohamad et al, 2013



Hewitt (1997) have proposed that the optimal selection of droplet size of spray results in maximum efficiency and minimum drift. As the droplet size influences the spray performance and minimizes drift. So for the available range of nozzles for spray application, it is logical that sprays should be classified according to droplet size. The 'British Crop Protection Council (BCPC)' and 'American Society of Agricultural Engineers (ASAE)', have developed systems to classify the agricultural-sprays by its droplet size.

The spray classification system devised by 'BCPC nozzle classification scheme' in the mid 1980's is of five categories, such as "Very Fine, Fine, Medium, Coarse and Very-Coarse" (Doble et al., 1985).

Figure 3 shows the BCPC Cumulative Volumetric Droplet Size Reference Categories, and Figure 4 shows the cumulative volumetric droplet size spectra for different types of nozzle. As each egg in a nest, is a solution which is represented by one individual in the population, and an egg of the cuckoo is a new solution. So, if the nozzle of pesticide sprayer is considered as the egg and the droplet size is considered as Cuckoo egg with a new solution. And the objective functions as minimum drift. Then, determining the solution for minimum drift for a given nozzle with different droplet sizes and comparing the obtained solutions with previous best solutions, will provide the optimum value finally that will be retained. In this way the CS algorithm can be applied for the optimization and selection of sprayers, with maximum efficiency with minimum drift.

While designing the agricultural tools & equipments by considering its operational environment, it is mostly observed that the ergonomic considerations for user friendly tools are almost neglected. Thus the farmers dealing with the tools and techniques during farming suffer from various musculoskeletal disorders (MSDs) and injuries.

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Figure 3. BCPC cumulative volumetric droplet size reference categories
Source: Hewitt, 2008

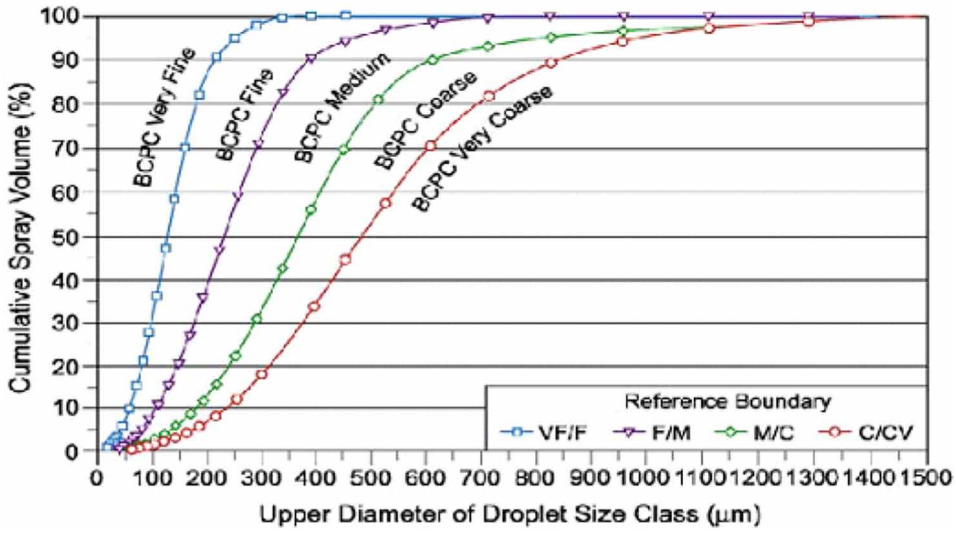
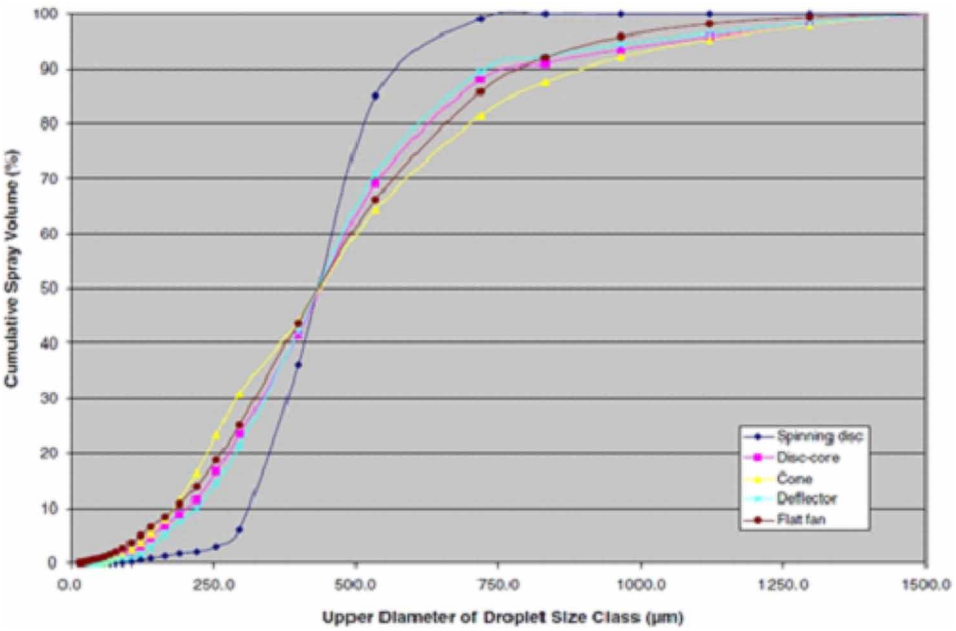


Figure 4. Cumulative volumetric droplet size spectra for different types of nozzles
Source: Hewitt, 2008



Musculoskeletal Disorders (MSDs) in Farming

It has been reported by many authors and researchers that the farmers engaged in agricultural sectors are highly affected by musculoskeletal disorders (MSDs) which not only cause harms but also is a threat

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to the health & life of them. For instance, lifting or carrying loads by hand and driving tractors were reported as risk factors for agricultural farmers (Parton et al., 1990; Murphy, 1992; Bobick et al., 1995). Most of the studies were carried out considering mechanized work applied in the work places. However the musculoskeletal disorders due to noise, vibrations produced by tractors and incorrect sitting postures of the operators were not considered, when using tractors in farming (Brookhuis et al., 2010). Pinzke et al. (2001) have reported that the body parts which are usually exposed to heavy loads are wrist, forearm, shoulder, neck and lumbar spine. Most of the jobs are designed considering the anthropometric dimensions of men and this result in lowering the productivity, increasing the discomfort level and the energy expenditure for women. Also it was reported that women's working continuously for eight hours, usually suffer from pain in hand, wrist, and neck (Jakob et al., 2009 and Stål et al., 2003). DeLuca (1997) has recommended the procedures to lift objects of unsymmetrical shapes based on his studies made on the musculoskeletal disorders due to handling, lifting, and transporting of objects by handcarts. Singh et al. (2010) have done an in depth literature review on musculoskeletal disorders of women agricultural farmers in India. Based on the conclusion of their study with musculoskeletal disorders with different body postures, they have recommended for ergonomically designed tools & equipments, and to have work rest periods for women. Kuta et al. (2015) have used surface electromyography system and job strain index method to analyze the muscle loads of fifteen farmers during milking, lifting, carrying a full bucket and in moving tractor. It was reported that maximum muscle force and tension occurred in the forearm muscle, while attaching teat cups to udder. Performance of work and associated work setting mainly causes the work related musculoskeletal disorders (Collins et al., 2011 and Punnett et al., 2004). Tinubu et al. (2010) and Smith et al. (2003) have reported that tenderness, disabilities, non-attendance, lower productivity and financial losses to the workers are caused mainly due to the musculoskeletal disorders in worldwide. The prolonged exposure to loads due to variable workloads results in musculoskeletal disorders (Kumar et al., 2013). High rate of doing work, repetitive work, forceful exertion, incorrect body postures and vibrations have been considered as the risk factors associated with the musculoskeletal disorders in the workplaces (NIOSH, 2002 and da Costa et al., 2010). Fabunmi et al. (2008), Schreuder et al. (2008), and Karahan et al. (2009) have reported that work is highly affected by musculoskeletal disorders, though its extent due to work is not clear. Also, the physiological and individual factors are more associated in developing the disorders. Mansi et al. (2013) and Arvidsson et al. (2012) have reported that repetitive movements, more application of forces, high working rates and incorrect postures for longer durations were found for the workers engaged in meat processing and performing various activities. The workers engaged in physical work are more affected by musculoskeletal disorders (Idowu et al., 2005). The hazards such as infection, lung cancer and knife related injuries are reported to be more evident in the case of butchers (Ola et al., 2008 and Corbin et al., 2011). Also, the butchers are more subjected to work related musculoskeletal disorders (Omokhodion et al., 2013). Pollack et al. (2007) have reported fatness and the excessive weight as the risk factors for occupational injuries. Janssen et al. (2011) have reported the natural means of musculoskeletal harms as altered step and stability, high forces in falls, high rate of sleep apneas & fatigues, and more susceptible to co-morbidities. Mishra et al. (2018) have considered ten farm women of Odisha in India and analyzed them while using plain and serrated sickles for cutting crops, and then an improved serrated sickle was recommended which resulted in reduction of the drudgery level in-comparison to the existing plain and serrated sickle. Pickett et al. (2015) have suggested that if the farmers feel inconvenience in their work due to fatness, then being self-employed they have the right and freedom to change or stop some sort of work. Bashir Kaka et al. (2016) have reported of high occurrence of work related muscu-

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loskeletal disorders between the butchers in Kano city and age was found to be the main risk factor. Also very few butchers only found to avail medical facilities. The musculoskeletal disorders (MSDs) was regarded as the most important public health related and work related problem, which varies from 15% to 42% (Hoogendoorn et al., 1999). Gallis (2006) has found that the maximum prevalence of MSDs occur in inexperienced laborers. The risk factors for MSDs were reported as physical, psychological, and socio-demographic characteristics (Devereux et al., 1999, 2002), various postural actions (Reid et al., 2010), faulty working postures (Scuffham et al., 2010), manually handling of materials (Yeung et al., 2002), standing and walking for longer durations (Andersen et al., 2007; Balasubramanian et al., 2009), prolonged shift works (Raanaas et al., 2008), distortion of trunk (Hartman et al., 2005), performing repetitive jobs (Juul-Kristensen et al., 2005), and poor work settings (Saurin et al., 2008). Meksawi et al. (2012) have reported of 52.9% of lower back pain for rubber tappers in Southern Thailand, which was found to be higher as compared to other regions. Ray et al. (2015) have suggested for improving the ergonomic performance of manual material handling tasks, based on their studies on the bio-mechanical assessment of manually material handling tasks of a construction site in India. It was reported that the compressive forces at some disc were above the limiting values for the construction workers. Kabir-Mokamelkhah et al. (2015) have considered the rice farmers in Iran and found the prevalence of musculoskeletal disorders in the lower limbs & the spinal sections. Luangwilai et al. (2014) have reported that MSDs are mainly associated with gender, education level, BMI, smoking habits, farming expertise and disease, if any. It was suggested that proper education and recommendations will improve the farming management system in rice farming. Gangopadhyay et al. (2010) have considered the stone-cutters and found significant work related disorders in the lower back, knees, and shoulders. Pascual et al. (2008) have reported that for assessment of work related musculoskeletal disorders (WMSDs), the National Institute of Occupational Safety and Health (NIOSH) used equations, and rapid upper limb assessment (RULA) or rapid entire body assessment (REBA), the certified-ergonomists used mostly Snook/Mital tables, while the Joint Health and Safety Committee (JHSC) used injury reports, and workers complaint. Dube et al. (2018) have analyzed different working postures of farmers of Odisha in India during seeding, fertilizing, and weeding, in agricultural field using RULA technique, and further it was suggested to give due attention to the present working techniques and methods. Das et al. (2012) have reported of major physiological loads and stresses between the female prawn seed collector of West Bengal in India, because of lengthy working hours in standing postures and more working pressures. Most of them were found suffering from musculoskeletal disorders in the lower back (98%), shoulders (75%), knees (88%), ankles (70%), and feet (67%), respectively. Similarly, the MSDs of the farmers of Kanpur in India were reported as lower back (60%), neck (10%), shoulder (22%), knee (39%), and highly afflicted chronically for nearly a year (Gupta et al. 2013).

Odisha is one of the prominent states in India, where most of the farmers prefer cultivation of rice. The farmers in the rural areas mainly prefer to use the traditional tools and techniques for farming purpose, and very few of them use the modern mechanized techniques. It has been found that most of the farmers undergo the musculoskeletal disorders (MSDs) because of a number of risk factors such as repetitive work, incorrect working postures, improper use of tools and techniques etc. Hence an attempt was made to collect and analyze the MSDs data for the farmers in Odisha while performing specific farming activities.

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RESEARCH METHODOLOGY

Materials

The following materials were used for the present study:

1. Standard Nordic Questionnaire
2. Computer (Windows 7)
3. Statistical software (IBM SPSS 22.0 version)

Method

The primary activities involved in rice cultivation process are land preparation, seeding, fertilizing & weeding, harvesting and threshing processes. In the present study the farmers only in seeding, fertilizing, and weeding activities were considered. In Odisha, five villages were selected randomly where more than 60% population were from farming background. For collecting the information and data, a team comprising of three members was formulated and were well informed about the purpose and methods to collect data. Prior consent from the respective village heads or leaders was obtained. Using, a standardized nordic questionnaire the data regarding name, gender, age, other personal characteristics, socio-demographic characteristics, economical characteristics about the requirements, work setting characteristics and tools & equipment characteristics with a five point rating scale i.e. (1 = Very less, 2 =Less, 3 = Nil, 4 = Strong, 5 = Very Strong) as shown in Appendix, was collected from 75 selected farmers and considering 2 years period i.e. from 2015 to 2017.The body parameters which were considered to be associated with MSDs were neck, shoulder, upper back, lower back, elbow, wrist/hand, thigh, knees and ankles, respectively as illustrated in Figure 5.

RESULTS AND DISCUSSION

From the socio-demographic characteristics of farmers (Table 1), it was observed that maximum musculoskeletal disorders of farmers were reported in lower back for age groups of <38 & in wrist for age groups of >38, in upper back of male farmers, in lower back and shoulder for female farmers. The disorders in shoulders were reported to be more, irrespective of "education levels, experiences, marital status, smoking habits, eating food habit per day, dominant hand, and previous weaknesses", respectively. The neck, upper back & lower back were reported to be highly affected for less than one year experienced farmers. Similarly, wrist & knee were reported to be more affected for 1-10 years & more than 10 years experienced farmers, respectively. Also, wrist was reported to be more affected irrespective of marital status, smoking habits, eating food habit per day, dominant hand, and previous weaknesses.

Similarly by considering the work-setting characteristics of farmers as shown in Table 2, higher occurrence of musculoskeletal disorders (MSDs) were found in "lower back & knees for sitting postures", and "neck, upper back, lower back, knees and ankles in squatting postures", and "upper back, lower back, wrist and knee in standing postures". The occurrence of MSDs in shoulder & wrist were more significant irrespective of working hours per day, working days per week and working time per day, respectively.

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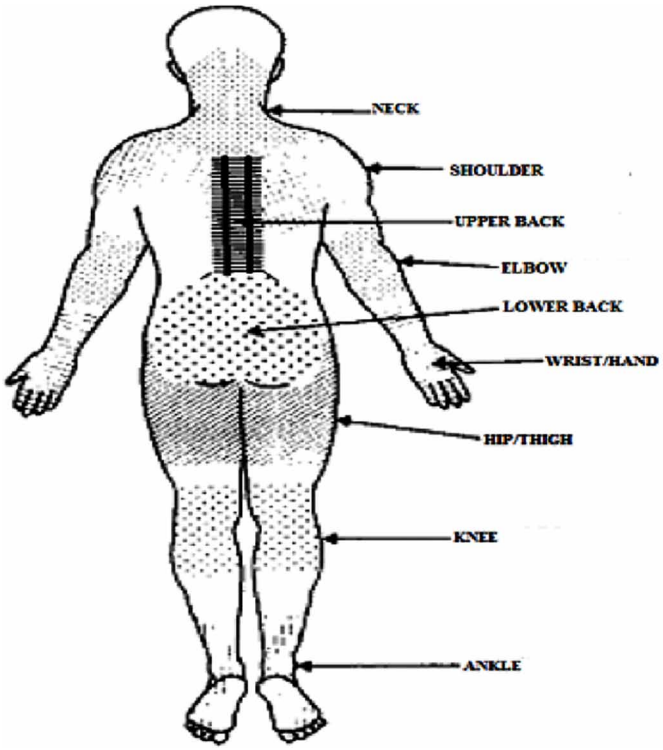
Also it was observed that repetitive jobs produced more MSDs in neck, shoulder, elbow, wrist and knees. However, carrying heavy loads resulted in higher MSDs in shoulder, lower back & wrist, respectively.

Figure 5. Prevalence of MSDs in human body



Factor analysis was done using SPSS 22.0 for the "seeding, fertilizing and weeding characteristics of farmers', "economical characteristics of farmers", and 'risk level of different body parts of farmers by tools & equipments during seeding, fertilizing and weeding processes" to group different parameters under various dominant factors, as illustrated in Table 3, Table 4, and Table 5, respectively. By using the principal component analysis method with rotated component matrix, the variables with factor loading more than or equal to 0.5 were only considered. The "Kaiser's eigen value criteria" with eigen value greater than 1.00 were selected for subsequent factors selection (Kaiser, 1960). Factor analysis of seeding, fertilizing and weeding characteristics of farmers resulted in 6 dominant factors with cumulative % of variance of 72.82% (Table.3). In factor 1, the factor loading is high in "puncture from bamboo stick of seed containers" which was 0.79. Other variables in factor 1 with factor loading ≥ 0.5 included "exposure to loud noise of pesticide applying machines", and "symptoms from pesticide exposure". So the factor1 was named as "expose". Factor loading in factor 2 was high in "injuries from falling of pesticide applying machines", which was 0.93. Other variable in factor 2 was "musculoskeletal problems from seeding by machine". So the factor 2 was named as "machine". The factor loading in factor 3 was found higher in "musculoskeletal problems from incorrect weeding postures", i.e. 0.85. The remaining variable in factor 3 was "exposure to vibration of pesticide applying machines". So the factor 3 was named as

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"discomfort". Factor loading in factor 4 was higher in 'nasal irritation from pesticide exposure", which was 0.75. And other variable in factor 4 was 'pesticides mixing and spraying processes". Hence, the factor 4 was named as "pesticide exposure". In factor 5, higher factor loading was found in "musculoskeletal problems from seeding by hand", which was 0.68. And the other variables in factor 5 were "exposure to wet and humid soil", "musculoskeletal problems from carrying heavy seed containers", "eye irritation from pesticide exposure". The factor 5 was named as "body". Further, the factor loading in factor 6 was obtained higher in "skin irritation from pesticide exposure", which was 0.84. Remaining variable in factor 6 was "musculoskeletal problems from carrying pesticides sprayer". Hence, the factor 6 was named as "pesticide spray".

Table 1. Socio-demographic characteristics of farmers (n=75)

Sl. No.	Parameters		No. of farmers reported of suffering of musculoskeletal disorders (MSDs)								
			Neck	Shoulder	Upper Back	Lower Back	Elbow	Wrist/Hand	Thigh	Knee	Ankle
1.	Age	< 38	16	20	19	23	15	22	14	15	19
		> 38	16	14	21	20	19	22	15	15	13
2.	Gender	Male	15	19	24	15	15	15	20	15	15
		Female	18	25	18	25	16	20	14	20	15
3.	Education Level	Under primary	15	25	12	15	21	18	19	23	16
		primary to High school	12	24	15	07	15	19	21	13	20
		More than High school	12	25	13	17	15	14	12	16	16
4.	Experience	< 1 Year	25	25	25	25	22	24	21	21	22
		1-10 Years	18	25	16	15	18	25	15	13	13
		>10 Years	19	25	17	16	16	16	16	25	10
5.	Marital Status	Un-married	13	25	16	15	19	25	16	14	14
		Married	16	23	16	25	17	25	16	17	17
6.	Smoking habits	Non-Smoker	20	25	15	11	10	25	11	17	11
		Smoker	22	25	25	25	09	25	02	25	09
7.	Eating food habit per day	< 2	08	25	15	16	15	25	15	14	07
		> 2	12	25	17	17	19	25	14	15	18
8.	Handedness/Dominant hand	Left-handed	16	25	19	22	17	25	17	16	14
		Right-handed	15	25	15	14	15	25	15	18	18
		Mixed-Handed	17	25	19	20	19	25	17	16	18
9.	Exposure to wet and humid soil	Low land	12	25	17	14	15	25	15	12	15
		Up land	18	25	16	21	22	25	20	18	17
		Wet land	13	25	15	15	15	25	15	15	12
		Dry land	11	25	16	18	15	25	15	15	12
		Horizontal/Plain	21	25	19	22	18	25	15	21	09
		Sloped	15	25	21	20	22	25	15	15	16
10.	Previous weakness/injuries, if any		11	25	14	18	19	25	19	15	14

n= Total number of farmers

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Table 2. Work-setting characteristics of farmers (n=75)

Sl. No.	Parameters		No. of farmers reported of suffering of musculoskeletal disorders (MSDs)								
			Neck	Shoulder	Upper Back	Lower Back	Elbow	Wrist/Hand	Thigh	Knee	Ankle
1.	Working posture(s)	Sitting	19	17	16	24	16	16	19	24	16
		Squatting	25	17	25	25	15	18	15	25	25
		Standing	17	17	25	25	17	25	17	25	18
2.	Working hours/day	< 3	15	24	25	15	24	17	17	16	21
		> 3	21	25	20	19	15	23	16	15	14
3.	Working days/week	< 4	16	25	18	17	16	25	18	16	16
		> 4	15	25	14	12	22	25	15	16	16
4.	Working time(s)/day	Before 8 A.M.	17	25	21	15	18	25	16	19	17
		8 A.M. – 12 P.M.	12	25	13	12	25	25	06	12	17
		After 12 P.M.	11	25	25	25	18	25	16	25	25
5.	Nature of job	Repetitive/forceful	25	25	20	17	25	25	19	25	20
		Carrying heavy loads	20	25	20	25	15	25	15	15	13

n= Total number of farmers

Similarly, the factor analysis for "economical characteristics of farmers" resulted in 2 dominant factors and the factor analysis for "risk level of different body parts of farmers by tools and equipments during seeding, fertilizing and weeding processes", resulted in 15 dominant factors. In the factor analysis for "economical characteristics of farmers" (Table.4), the factor 1 was named as "manufacturing" and factor 2 as "farming", based on the requisite of manufacturer and farmers. In the factor analysis of "risk level of different body parts of farmers by tools and equipments during seeding, fertilizing and weeding processes" (Table 5), the factor 1 was named as "body-joint" as most of the body joint parts were involved. Similarly, factor 2 was named as "movement" as the MSDs in knees, ankles, & shoulder occur mainly due to movements. Subsequently, factor 3 was named as "discomfort" because the MSDs in neck, upper-back, & thigh results discomfort in work. Looking at the pain level of body parts, the factor 4 was named as "upper back pain", factor 5 as "shoulder pain", factor 6 as "wrist-ankle pain", factor 7 which included upper back, lower back & ankle, was named as "joint-pain", factor 8 including knee, ankle, wrist & thigh was named as "hand-leg pain", factor 9 as "seeding pain" which comprised of neck, shoulder, elbow, wrist in seeding process, factor 10 as "weeding pain" comprising of neck & knee, factor 11 as "thigh-ankle pain", factor 12 as "thigh pain", factor 13 as "arm pain", factor 14 as "lower back pain", and factor 15 as "neck pain", respectively.

To illustrate the strength & linear relationship of various variables under consideration, the Pearson Correlation coefficients between various dominant factors in the "seeding, fertilizing and weeding characteristics of farmers" was obtained (Table 6). By using "pearson product moment correlation" in IBM SPSS 22.0 version, the correlation coefficient matrix was obtained. It was found that very high positive correlation coefficient i.e. 0.599 was in between the parameters f-e, which was between "injuries from falling of pesticide applying machines" and "musculoskeletal problems from seeding by machine". Also, very high negative correlation coefficient value of -0.666 was obtained in between the parameters h-g,

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which was between "musculoskeletal problems from incorrect weeding postures" and 'exposure to vibration of pesticide applying machines". It was further found that non-linear relationships with correlation coefficient value of 0.000 existed between the parameters p-b & p-l, which was between 'symptoms from pesticide exposure (skin irritation) & exposure to loud noise of pesticide applying machines", and "symptoms from pesticide exposure (skin irritation) & musculoskeletal problems from carrying heavy seed containers", respectively.

Table 3. Seeding, fertilizing and weeding characteristics of farmers (n=75)

Parameters		Factor 1 (Expose)	Factor 2 (Machine)	Factor 3 (Discomfort)	Factor 4 (Pesticide exposure)	Factor 5 (Body)	Factor 6 (Pesticide Spray)
1.Exposure to wet and humid soil						0.64	
2.Musculoskeletal problems from carrying heavy seed containers						-0.59	
3.Puncture from bamboo stick of seed containers		0.79					
4.Musculoskeletal problems from seeding by hand						0.68	
5.Musculoskeletal problems from seeding by machine			0.73				
6.Pesticides-mixing and spraying processes					0.71		
7.Exposure to loud noise of pesticide applying machines		0.52					
8.Exposure to vibration of pesticide applying machines				-0.81			
9.Injuries from falling of pesticide applying machines			0.93				
10.Musculoskeletal problems from carrying pesticides sprayer							0.66
11.Musculoskeletal problems from incorrect weeding postures				0.85			
12.Symptoms from pesticide exposure	a) Vomiting	0.78					
	b) Skin irritation						0.84
	c) Nasal irritation				0.75		
	d) Eye irritation					0.62	
	e) Headache	-0.63					
Eigen value		02.88	02.48	01.94	01.68	01.44	01.20
Variance in %		18.00	15.53	12.17	10.53	09.04	07.51
Cumulative variance in %		18.00	33.54	45.71	56.25	65.30	72.82

n= Total number of farmers

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Table 4. Economical characteristics of farmers (n=75)

Parameters	Factor 1 (Manufacturing)	Factor 2 (Farming)
1.Compliance with cost		-0.80
2.Cost reduction of existing Appliances	0.85	
3.Quality	0.84	
4.Service capability		0.69
5.Innovativeness		0.76
6.New use of technologies / modifications of design	0.62	
Eigen value	02.97	01.04
Variance in %	49.50	17.41
Cumulative variance in %	49.50	66.91

n= Total number of farmers

Table 5. Risk level of different body parts of farmers by tools and equipments during seeding, fertilizing and weeding processes (n=75)

Parameters#		Factors*														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
A	Neck			0.90												
	Shoulder					0.85										
	Upper Back				0.93											
	Lower back	0.85														
	Elbow	0.93														
	Wrist/Hand						0.50									
	Thighs												0.52			
	Knees		0.98													
	Ankles		0.67													
B	Neck			0.85												
	Shoulder					0.85										
	Upper Back				0.93											
	Lower back	0.85														
	Elbow	0.93														
	Wrist/Hand	0.52														
	Thighs	0.57														
	Knees		0.98													
	Ankles		0.66													

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Table 5. Continued

Parameters#		Factors*														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
C	Neck									0.71						
	Shoulder									0.77						
	Upper Back			0.52												
	Lower back	0.66														
	Elbow									0.66						
	Wrist/Hand									0.71						
	Thighs	0.72														
	Knees	0.78														
	Ankles	0.85														
D	Neck			0.90												
	Shoulder															
	Upper Back				0.93											
	Lower back	0.79														
	Elbow	0.93														
	Wrist/Hand	0.66														
	Thighs												0.52			
	Knees		0.98													
	Ankles		0.67													
E	Neck			0.90												
	Shoulder					0.72										
	Upper Back				0.93											
	Lower back														0.67	
	Elbow	0.93														
	Wrist/Hand						0.50									
	Thighs												0.52			
	Knees		0.98													
	Ankles		0.67													
F	Neck			0.90												
	Shoulder					0.85										
	Upper Back				0.93											
	Lower back	0.85														
	Elbow	0.93														
	Wrist/Hand						0.50									
	Thighs			0.73												
	Knees		0.69													
	Ankles	-0.50														

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Table 5. Continued

Parameters[#]		Factors*														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
G	Neck			0.90												
	Shoulder		0.98													
	Upper Back				0.93											
	Lower back	0.85														
	Elbow	0.93														
	Wrist/Hand						0.50									
	Thighs											0.76				
	Knees		0.98													
	Ankles											0.66				
H	Neck			0.87												
	Shoulder		0.98													
	Upper Back				0.93											
	Lower back	0.85														
	Elbow	0.93														
	Wrist/Hand						0.50									
	Thighs											0.79				
	Knees		0.98													
	Ankles											0.66				
I	Neck			0.90												
	Shoulder					0.85										
	Upper Back				0.93											
	Lower back	0.85														
	Elbow	0.93														
	Wrist/Hand						0.50									
	Thighs			0.66												
	Knees		0.98													
	Ankles						-0.66									
J	Neck	0.85														
	Shoulder	0.82														
	Upper Back	0.80														
	Lower back	0.78														
	Elbow	0.86														
	Wrist/Hand	0.85														
	Thighs	0.68														
	Knees								0.77							
	Ankles								0.58							

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Table 5. Continued

Parameters#		Factors*														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
K	Upper Back	0.93														
	Lower back	0.95														
	Elbow	0.95														
	Wrist/Hand	0.95														
	Thighs	0.95														
	Knees	0.95														
	Ankles	0.93														
L	Neck			0.68												
	Shoulder	0.64														
	Upper Back	0.86														
	Lower back	0.95														
	Elbow	0.86														
	Wrist/Hand	0.95														
	Thighs	0.95														
	Knees	0.79														
	Ankles	0.93														
M	Neck										-0.60					
	Shoulder													0.77		
	Upper Back							0.68								
	Lower back							0.76								
	Elbow	0.87														
	Wrist/Hand								0.88							
	Thighs								0.65							
	Knees										0.92					
	Ankles							0.77								
N	Neck															0.56
	Shoulder													0.77		
	Upper Back							0.68								
	Lower back							0.72								
	Elbow	0.87														
	Wrist/Hand								0.88							
	Thighs								0.65							
	Knees										0.92					
	Ankles							0.77								

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Table 5. Continued

Parameters[#]		Factors*														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
O	Neck	0.67														
	Shoulder	0.76														
	Upper Back			0.62												
	Lower back	0.95														
	Elbow	0.95														
	Wrist/Hand	0.95														
	Thighs	0.95														
	Knees	0.85														
	Ankles	0.95														
	Eigen value	58.07	16.16	12.11	08.11	07.79	06.49	04.90	03.95	02.85	02.51	02.01	01.81	01.57	01.34	01.15
	Variance in %	43.02	11.97	08.97	06.00	05.77	04.81	03.63	02.92	02.11	01.86	01.49	01.34	01.16	0.99	0.85
	Cumulative variance in %	43.02	54.99	63.97	69.97	75.75	80.56	84.19	87.12	89.23	91.10	92.59	93.93	95.09	96.09	96.94

[#]**Factors:**1-Body-joint, 2-Movement, 3-Discomfort, 4-Upper back pain, 5-Shoulder pain, 6-Wrist-Ankle pain, 7-Joint-pain, 8-Hand-leg pain, 9-Seeding pain, 10-Weeding pain, 11-Thigh-ankle pain, 12-Thigh pain, 13-Arm pain, 14-Lower back pain, 15-Neck pain.

[#]**Parameters:** A- Seeding/Planting (Completely Manual), B-Seeding/Planting (Partially Manual), C-Seeding/Planting (Completely Mechanical), D- Transplanting (Completely Manual), E- Transplanting (Partially Manual), F- Transplanting (Completely Mechanical), G- Holding, Mixing, Carrying of Sprayer (Completely Manual), H- Holding, Mixing, Carrying of Sprayer (Partially Manual), I- Holding, Mixing, Carrying of Sprayer (Completely Mechanical), J- Spraying pesticides process (Completely Manual), K- Spraying pesticides process (Partially Manual), L- Spraying pesticides process (Completely Mechanical), M- Weeding (Completely Manual), N- Weeding (Partially Manual), O- Weeding (Completely Mechanical).

n= Total number of farmers

The best fit linear regression equations between "innovativeness" and "other economic characteristics" were obtained by using regression analysis for the economic characteristics (Table 7). It was found that the economic parameters such as compliance with cost, and quality, were significant at $p < 0.05$. However, the parameters such as cost reduction of existing appliances, service capability, and innovativeness, were found significant at $p < 0.01$. The value of F indicated that the probability of the null hypothesis for the full-model was true and all of the regression coefficients were zero.

CONCLUSION

There were dual main contributions in the study. In the first phase of study the application of Cuckoo search algorithm for the optimum performance of pesticide sprayer was discussed based on the extensive literature review. As the pesticide sprayer has been frequently used by most of the farmers, hence the optimization and selection of sprayers with maximum efficiency and minimum drift could enhance the yield of crops. The Cuckoo search algorithm can be applied for determining the solution for minimum drift for a given nozzle with different droplet sizes and comparing the obtained solutions with previous best solutions. Thus the optimum value obtained finally will be retained.

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Table 6a. Correlation coefficient matrix for seeding, fertilizing and weeding characteristics

Parameters[##]	a	b	c	d	e
a	1.000				
b	0.314	1.000			
c	0.462*	0.462*	1.000		
d	-0.404*	-0.036	-0.364	1.000	
e	-0.017	0.299	0.129	-0.169	1.000
f	-0.272	0.320	0.128	0.014	0.599**
g	-0.302	-0.266	-0.292	0.119	-0.215
h	0.021	0.140	0.049	0.049	0.229
i	0.160	0.043	-0.015	-0.035	-0.073
j	0.042	-0.125	0.026	0.026	-0.132
k	0.141	0.101	0.100	-0.014	-0.064
l	0.341	0.063	0.139	-0.042	-0.117
m	0.119	0.169	0.140	-0.041	0.013
n	-0.220	-0.157	-0.124	0.071	-0.127
o	-0.116	-0.264	-0.025	0.098	-0.464*
p	-0.124	0.000	-0.143	0.163	-0.253

Table 6b. Correlation coefficient matrix for seeding, fertilizing and weeding characteristics

f	g	h	i	j	k	l	m	n	o	p
1.000										
-0.014	1.000									
-0.006	-0.666**	1.000								
-0.098	-0.317	0.233	1.000							
0.073	-0.026	-0.011	0.395	1.000						
-0.199	0.014	0.149	0.098	0.079	1.000					
-0.391	-0.256	0.202	0.155	0.172	-0.160	1.000				
0.104	0.119	-0.274	-0.192	-0.145	0.257	-0.282	1.000			
0.196	-0.071	-0.029	0.125	0.178	0.212	-0.415*	0.162	1.000		
-0.244	0.013	-0.133	0.411*	0.272	-0.376	0.067	-0.194	0.074	1.000	
-0.076	0.163	-0.270	-0.193	-0.179	-0.227	0.000	0.205	-0.193	0.439*	1.000

* Correlation is significant at p< 0.05

** Correlation is significant at p< 0.01

[##]**Parameters: a**- Puncture from bamboo stick of seed containers, **b**- Exposure to loud noise of pesticide applying machines, **c**- Symptoms from pesticide exposure (Vomiting), **d**- Symptoms from pesticide exposure (Headache), **e**- Musculoskeletal problems from seeding by machine, **f**- Injuries from falling of pesticide applying machines, **g**- Exposure to vibration of pesticide applying machines, **h**- Musculoskeletal problems from incorrect weeding postures, **i**- Pesticides-mixing and spraying processes, **j**- Symptoms from pesticide exposure (Nasal irritation), **k**- Exposure to wet and humid soil, **l**- Musculoskeletal problems from carrying heavy seed containers, **m**- Musculoskeletal problems from seeding by hand, **n**- Symptoms from pesticide exposure (Eye irritation, **o**- Musculoskeletal problems from carrying pesticides sprayer, **p**- Symptoms from pesticide exposure (Skin irritation).

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Table 7. Best-Fit Linear Regression Equation between Innovativeness (X_5) and Other Economic Characteristics

Sl. No.	Parameters	Regression Equation	F
1	Compliance with cost(X_1)	$X_5 = 4.78\text{-}0.37X_1$	03.98*
2.	Cost reduction of existing Appliances(X_2)	$X_5 = 1.48+0.60X_2$	07.96**
3.	Quality(X_3)	$X_5 = 1.84+0.49X_3$	04.30*
4.	Service capability(X_4)	$X_5 = 1.00+0.75X_4$	27.05**
5.	Innovativeness(X_5)	$X_5= 1.19\text{-}0.21X_1+0.26X_2+0.08X_3+0.60X_4\text{-}0.14X_6$	06.29**
6.	New use of technologies/modifications of design(X_6)	$X_5 = 3.14+0.20X_6$	01.17

* Correlation is significant at $p < 0.05$

** Correlation is significant at $p < 0.01$

In the second phase of study the musculoskeletal disorders (MSDs) of farmers were analyzed. From the socio-demographic characteristics of farmers, it was observed that maximum musculoskeletal disorders of farmers were reported in lower back for age groups of <38 & in wrist for age groups of >38, in upper back of male farmers, in lower back and shoulder for female farmers. The disorders in shoulders were reported to be more, irrespective of "education levels, experiences, marital status, smoking habits, eating food habit per day, dominant hand, and previous weaknesses", respectively. Similarly by considering the work-setting characteristics of farmers as shown, higher occurrence of MSDs were found in "lower back & knees for sitting postures", and "neck, upper back, lower back, knees and ankles in squatting postures", and "upper back, lower back, wrist and knee in standing postures". The occurrence of MSDs in shoulder & wrist were more significant irrespective of working hours per day, working days per week and working time per day, respectively. Also it was observed that repetitive jobs produced more MSDs in neck, shoulder, elbow, wrist and knees. However, carrying heavy loads resulted in higher MSDs in shoulder, lower back & wrist, respectively.

Further, from the correlation coefficient matrix it was found that very high positive correlation coefficient i.e. 0.599 was in between "injuries from falling of pesticide applying machines" and "musculoskeletal problems from seeding by machine". Also, very high negative correlation coefficient value of -0.666 was obtained in between "musculoskeletal problems from incorrect weeding postures" and 'exposure to vibration of pesticide applying machines". It was further found that non-linear relationships with correlation coefficient value of 0.000 existed between "symptoms from pesticide exposure (skin irritation) & exposure to loud noise of pesticide applying machines", and "symptoms from pesticide exposure (skin irritation) & musculoskeletal problems from carrying heavy seed containers", respectively.

Finally from the regression analysis for the economic characteristics it was found that the economic parameters such as compliance with cost, and quality, were significant at $p < 0.05$. However, the parameters such as cost reduction of existing appliances, service capability, and innovativeness, were found significant at $p < 0.01$.

Further MSDs analysis may be carried out considering more number of farmer populations and due considerations must be given in the ergonomic aspects of farming tools and equipment designs, such that the productivity, working efficiency of farmers can be enhanced and the drudgery can also be reduced to a significant level.

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KEY TERMS AND DEFINITIONS

Agricultural Injury: It is the injury which occurs while doing some farm work or may occur while going to or from work.

Disorders: It is the disruption in the systematic functioning that retards the performance level.

Farming: Farming is the process of growing of crops or keeping animals by people for food and raw materials.

Injury: Injury is the damage to the body caused by some external forces. Different causes of injuries include accidents, falls, hits, weapons, and other factors.

Musculoskeletal Disorders: These are the disorders or injuries which affects the human body's movement and/or the musculoskeletal systems of body.

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APPENDIX

Sample Questionnaire for Seeding, Fertilizing and Weeding Process

Place:
Date:

Please put (√) sign in your answer, where necessary:

Name (Optional):_____
Age: _____
Sex: _____
Left Handed () / Right Handed ()
Educational Level: _____
Land Holding: Own () / Rented () / Contract ()
Drought land () / Non-Drought land ()
Water source: Own () / External ()
Availability of Irrigation: Yes () / No ()
Water carrying facility: Manually () / Pump () / Both Manually and Pump () / others ()
Dependent on Rain water: No () / Partially () / Fully ()
Family Size (number and char): _____
Address: _____

Please put (√) in appropriate criteria option. *(Otherwise use any symbol as your own)*
NOTE: 1 indicates the least important and 5 indicates the most important
(1 = Very less, 2 = Less, 3 =Nil, 4 = Strong, 5 = Very Strong).

Table 8.

SEEDING, FERTILIZING AND WEEDING PROCESS		1	2	3	4	5
1.	Exposure to wet and humid soil					
2.	Musculoskeletal problems from carrying heavy seed containers					
3.	Puncture from bamboo stick of seed containers					
4.	Musculoskeletal problems from seeding by hand					
5.	Musculoskeletal problems from seeding by machine					
6.	Pesticides-mixing and spraying processes					
7.	Exposure to loud noise of pesticide applying machines					
8.	Exposure to vibration of pesticide applying machines					
9.	Injuries from falling of pesticide applying machines					
10.	Musculoskeletal problems from carrying pesticides sprayer					

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SEEDING, FERTILIZING AND WEEDING PROCESS			1	2	3	4	5
11.	Symptoms from pesticide exposure	a) Vomiting					
		b) Skin irritation					
		c) Nasal irritation					
		d) Eye irritation					
12.	Musculoskeletal problems from incorrect weeding postures						

Table 9.

ECONOMIC REQUIREMENT		1	2	3	4	5
1.	Compliance with cost					
2.	Cost reduction of existing Appliances					
3.	Quality					
4.	Service capability					
5.	Innovativeness					
6.	New use of technologies / modifications of design					

Musculoskeletal Risk Level During Seeding, Fertilizing and Weeding Process

Table 10. Socio-Demographic Characteristics

Sl. No.	Parameters		Neck	Shoulder	Upper Back	Lower back	Elbow	Wrist/ Hand	Thighs	Knees	Ankles
1.	Age	< 38									
		> 38									
2.	Gender	Male									
		Female									
3.	Education Level	Under primary									
		primary to High school									
		More than High school									
4.	Experience	< 2 Yrs									
		2-10 Yrs									
		>10 Yrs									
5.	Marital Status	Un-married									
		Married									
6.	Smoking habits	Non-Smoker									
		Smoker									
7.	Eating food habit per day	< 2									
		> 2									
8.	Handedness/ Dominant hand	Left-handed									
		Right-handed									
		Mixed-Handed									

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Sl. No.	Parameters		Neck	Shoulder	Upper Back	Lower back	Elbow	Wrist/ Hand	Thighs	Knees	Ankles
9.	Exposure to wet and humid soil	Low land									
		Up land									
		Wet land									
		Dry land									
		Horizontal/Plain									
		Sloped									
10.	Previous weakness/injuries, if any										

Table 11. Work-setting characteristics

Sl. No.	Parameters		Neck	Shoulder	Upper Back	Lower back	Elbow	Wrist/ Hand	Thighs	Knees	Ankles
1.	Working posture(s)	Sitting									
		Squatting									
		Standing									
2.	Working hours/day	< 3									
		> 3									
3.	Working days/week	< 4									
		> 4									
4.	Working time(s)/ day	Before 8 A.M.									
		8 A.M. – 12 P.M.									
		After 12 P.M.									
5.	Nature of job	Repetitive/forceful									
		Carrying heavy loads									

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Table 12. Tools and equipments characteristics

Sl. No.	Parameters		Neck	Shoulder	Upper Back	Lower back	Elbow	Wrist/ Hand	Thighs	Knees	Ankles
1.	Seeding/ Planting	Completely Manual									
		Partially Manual									
		Completely Mechanical									
2.	Transplanting	Completely Manual									
		Partially Manual									
		Completely Mechanical									
3.	Holding, Mixing, Carrying of Sprayer	Completely Manual									
		Partially Manual									
		Completely Mechanical									
4.	Spraying pesticides process	Completely Manual									
		Partially Manual									
		Completely Mechanical									
5.	Weeding	Completely Manual									
		Partially Manual									
		Completely Mechanical									

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Section 6
Managerial Impact

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Chapter 79
Work Leadership, Occupational Health, and Safety

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ABSTRACT

Occupational health and safety (OHS) systems are designed to identify and minimize risks at the workplace. A thriving business community should seek to create jobs, wealth, good leadership, safe, and healthy working conditions that are essential for production of goods and provisions of services. Therefore, managers have a legal and moral duty to safeguard the health and safety of those who work for them, and the exercise of these duties needs to be seen as central to the role of leadership. There is a growing interest among researchers and organizational practitioners about occupational safety in recent years. The chapter provides an exhaustive discourse on the relevance of occupational health and safety systems in modern day workplaces as well as the nexus between management leadership and occupational health and safety. It highlights the guiding principles to leadership and key issues in efficient administration of OHS. The chapter concludes by recommending the role leaders should play to improve safety and health in the workplace.

INTRODUCTION

The organized workplaces across the global world has in the recent past witnessed tremendous economic, technological growth and enhanced employability except in some developing countries such as Nigeria. This growth has raised serious concerns over occupational safety in virtually all work sectors, particularly manufacturing sector, including tertiary and quaternary services. Managing Occupational Health and Safety (OHS) effectively is a key element in running a successful business in today's workplace. Nowadays, work place safety is considered by World Health Organization (WHO) a priority setting for health promotion in the 21st century (Takala, 1999; WHO, 2010). Therefore, managers have a legal and moral duty to safeguard the health and safety of those who work for them, and the exercise of these duties needs to be seen as central to the role of leadership. There is a growing interest among researchers,

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management and organizational practitioners about occupational safety in recent years. This is probably informed by the growing incidence of workplace illness, injury and death which impose large cost on national economies and operational efficiency of organizations. International Labor Organization (ILO) and WHO reports indicated that in manufacturing industries many employees suffer from workplace injuries and property damage resulted in economic crisis (ILO, 2006; ILO, 2010; WHO, 2010). Every 15 seconds, a worker dies from a work-related accident or disease. Every 15 seconds, 153 workers have a work-related accident (Jilcha & Kitaw 2016). Every day, 6,300 people die as a result of occupational accidents or work-related diseases – more than 2.3 million deaths per year (ILO, 2010; WHO, 2010; Jilcha & Kitaw, 2016).

These costs accrue to the individual workers who suffer, their families, the businesses that employ them, and the society at large due to the costs associated with health care and treatment (Gahan, Sievewright & Evans, 2014). Economic analysis of workplace health and safety has for example, consistently shown that jobs or occupations associated with lower levels of workplace safety typically attract a wage premium (Heaney & Irish, 2007; Gahan, Sievewright & Evans, 2014)). Economists have also sought to estimate the marginal costs associated with work related death in different part of the world. For example, using Australian data, Miller, Mulvey and Norris (1997) estimate the economic cost associated with a work-related death to be between $11million and $19million only in Australia. Although estimates vary significantly from country to country, the International Labor Organization (ILO, 2006) has estimated that the cost associated with workplace death, injury and illness is approximately 4 percent of annual global domestic product. In developing countries including Nigeria, the risk of having work-related injury is almost 15 to 25 times higher than that of developed counties. This is because in developing countries (e.g. Nigeria), majority of the workforce is employed in small and medium scale industries that do not meet the minimum standards and guidelines set by the WHO and the ILO for occupational health, safety and social protection (Barling, Loghlin & Kelloway, 2002; Tadesse & Kumie, 2007). Occupational health and safety laws cover only about 10% of the population in developing countries, omitting many major hazardous industries and occupations (see LaDou, 2003; Linhard, 2005). Occupational health remains neglected in most developing countries under the pressure of devastating social, economic, and political challenges (Ahasan & Partanen, 2001; O'Neill, 2000; Christiani, durvassula, & Myers, 1990; Barling, Loghlin & Kelloway, 2003)

Occupational Health and Safety (OHS), also commonly or otherwise referred to as Occupational Safety and Health (OSH), or Workplace Health and Safety (WHS), is a multidisciplinary field concerned with the safety, health, and welfare of people at work. It is a field of healthcare concerned with enabling an individual to undertake their occupation, in the way that causes least harm to their health. As defined by the World Health Organisation (WHO) occupational health deals with all aspects of health and safety in the workplace and has a strong focus on primary prevention of hazards. While "Health" has been defined by WHO as "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity. By implication, occupational health and safety is all about promotion of health and safety at work, which is concerned with preventing accidents, harm or injury from any incidental hazards, arising in the workplace.

In recent years however, occupational health and safety of the workers has improved and is relatively satisfactory in developed countries, whereas in developing countries, occupational health receives little attention and comes at low level in the list of national priorities (Perrow, 1984). Studies showed that there are baskets of measures providing information on a range of health and safety performances (HSE, 2001; Yusuf, Moges, & Ahmed, 2014). Nevertheless, the traditional workplace-oriented occupational health

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has proven to be insufficient in the developing world, and tangible progress in occupational health can be achieved only by linking occupational health to the broader context of social justice and national development (Swuste & Eijkemans, 2002; Joubert, 2002; Michaels, Barrera, & Gacharna, 1985; Mendes, 1985).

The purpose of the chapter is to examine work leadership in managing occupational health and safety issues, problems, and violations in Nigeria. It would also suggest solutions or recommendations and future research direction.

BACKGROUND

Safety and health are constituents of welfare because health is wealth. A healthy worker is a productive worker and an asset to the organization. An unhealthy worker constitutes a liability which infringes on the marginal profit of the organization, due to low productive and marginal input in the overall process of production (Machida, 2009; Onuegbu, 2010; Mokikan, 2012; Ngwama, 2016). Nigerian workers across all sectors of economy recent years, have been subjected to accidents which range from minor to fatal injuries, while some have lost their lives, some loosing vital organs and rendered permanently incapacitated (Ngwama, 2016). An estimated whooping total sum of 159 000 people in the Nigeria die each year as a result of occupational diseases and industrial accidents (ILO, 2012). Despite these entire estimated figure, unlike in the advance nations of the world, it is still very difficult to quantify the health impact of occupational diseases in the Nigeria workplace because there is no consensus on the data. The rate of the industrial accidents and the general lethargy of the employers to respond to the issues of safety and health in workplaces are becoming a growing concern in Nigeria (Bankole & Lawal, 2012; Fajana, 2012; Ahiuma-Young 2012; Ngwama, 2016).

According to Ahiuma-Young (2012) an estimated 2.3 million occupational fatalities occur annually while nothing less than 100 occupational fatalities and some billions of capital losses have been recorded in Nigeria between April 28, 2009 and April 2010 (ILO, 2012; Ngwama, 2016). Not less than 200 cases of industrial accidents occur in the workplaces in Nigeria daily with an equally high rate of fatalities. Available statistics indicates that no fewer than 400 workers have lost their lives in the power sector between 2010 and 2012 while performing their official duties. In the maritime sector, also findings show that since the concession of the ports, over 100 cases of fatal industrial accidents have occurred with over ten deaths, numerous incapacitations and innumerable serious body injuries. Fajana (2012) estimated that at least 50 million Nigerians are at risk of occupational hazards. This group he pointed out includes about 3.2 million Nigerians and children who are involved in economic activities, (even as abused participants) in the labour market.

Occupational Health as defined by the joint committee of the ILO/WHO is the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupation. It is further explained as the sum total of all activities and programs that are engaged upon, aiming to attain and maintain the highest level of health and safety for all people who are engaged in any type of work whatever. It involves the protection of workers' health from any hazard to which they may be exposed to in the work environment. It is a preventive and proactive approach which involves risk assessment, hazard identification, hazard mitigation, hazard elimination and treatment of work-related injuries. There is a plethora of hazards (safety and health hazards) which people are exposed to in their jobs; from the formal industries (banking, oil and gas, textile, agricultural, construction, food and beverage etc.) to the informal (logging and sawmill, roadside mechanic, carpentry, local welders, pepper grinders, market

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traders etc.). Exposure to these hazards occurs for fairly long hours on a daily basis as the majority of the active hours of the day is spent at work (i.e. at least 8 hours per day). These hazards include chemical, biological, physical, mechanical, psychological and ergonomic hazards. For any person affected, it could be either or a couple of the various forms of hazard.

The risk of death or injuries from fire hazards in the workplace, continue to raise concern, irrespective of the international standards to strengthening of legal and other supporting measures to improve workplace safety and health in all countries, particularly in developing countries. In Nigeria, there is lack of comprehensive data in the area of occupational/ industrial hazards and this has become a great challenge given the atrociousness of industrial accidents which is undermining workers' productive effort in the organizations (Onuegbu, 2010; Ngwama, 2016). Particularly, work-related accidents and diseases continue to be a serious problem in both developed and developing countries including Nigeria. Nigerian workers across all sectors of the economy have been subjected to workplace accidents which range from minor to fatal, as some have lost their lives right in the line of duty, while some have lost vital organs, therefore rendered permanently incapacitated. The issue of safety and health at workplace which once occupied a major place in the programmes and plans of the employers are now treated with levity (Ngwama, 2016). One such case in mind was the fire incident that razed a plastic factory in Ikorodu, Lagos State in 2002 where many workers roasted to death at night because of the negligence of the Chinese owners of the company who locked the workers in the factory without provision for emergency exit (Ngwama, 2016). There are equally other unregistered companies using the incorporation as cover, many of them have worse cases involving health and safety of their workers

The ILO estimates that 250 million workers are involved in accidents every year and out of which 300,000 are killed. There are at least 335,000 fatal injuries caused by accidents at work. Putting accidents and diseases together, the global estimate of work-related deaths amounts to 1.1 million per year, and this according to ILO is grossly underestimated probably because of lack of comprehensive statistical data from many member states (International Labor Conference 87th Session 1999:37, ILO 274th session 1999). The economic losses are enormous and, in terms of shattered families and communities, the damage is incalculable. International Labor Organization (ILO) estimates suggest that 159 000 people in the Nigeria die each year as a result of occupational diseases and industrial accidents (ILO, 2012). Despite the seeming deplorable state of occupational and safety issues in the workplace in Nigeria at present, the policy framework targeted towards reducing the rate of industrial accidents through preventive measures as well as to create awareness on the rights of victims of industrial accidents are weak and hardly enforced (Alana, 2010; Onuegbu, 2010; Fajana, 2012; Mokikan, 2012; Ngwama, 2016). More recently, the World Economic Forum (WEF, 2012) has estimated that cardiovascular diseases alone result in productivity losses of $US389 billion globally, whilst mental illnesses estimated to reduce economic output by $1.6 trillion. Other research suggests that workplace health and safety may have more far-reaching macroeconomic consequences. The ILO (2012) for example, also finds a strong correlation between national workplace fatality rates and the World Economic Forum (WEF) Global Competitive Index, suggesting that inadequate WHS practices place a heavy burden on national economic growth (Gahan, Sieve wright & Evans, 2014).

In the manufacturing sector for example, the frequency of fatal industrial accidents is very alarming. Many times, the managements collaborate with some union officials to conceal cases of industrial accidents and secretly negotiate compensation (Ahiuma-Young, 2012; Ngwama, 2016). The management simply pays out paltry sums as compensation to the families of victims in both deaths and permanent disabilities. Some of the victims who have suffered major injuries like loss of their hands or legs are often

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dismissed after receiving tokens that the companies give out on "compassionate" ground. The Workman Compensation Act that is supposed to address issues of industrial accidents is inconsistent and lack implementation. The alarming rate of the industrial accidents and the general lethargy of the employers to reduce the rate of industrial accidents through preventive measures demand creation of awareness on the rights of victims of industrial accidents. Ahiuma-Young (2012) observed that the incidence of industrial accidents at the workplace in Nigeria and fatality rate as well as the inherent dangers posed to the socio-economic and political development of the country constitute a serious threat. He notes that the federal government has failed in enforcing industrial safety policies at the workplace and some of the trade unions pay less attention to the safety of their members.

The employers have relegated issues of safety to the background in the country on the premise of the harsh economic environment. Most of the victims of workplace accidents preferred to suffer in silence, because they have been warned by their employers of severe consequences if they try to make any case with the organization. More often than not, most of these companies operate in secluded areas with untraceable addresses and are abound in all part of the country (Ngwama, 2016). In view of the foregoing, this chapter takes a critical look at the OHS issues, problems and trends in the workplace in Nigeria using robust descriptive qualitative analysis of extant literatures and empirical studies in Nigeria and beyond. Particularly, those critical issues threatening the lives of average workers in Nigeria and suggests recommendations that are sufficient anchored on findings from empirical studies. All stakeholders must be mobilized for concerted efforts against unpopular government policies that tend undermine occupational health and industrial safety to protect the employers at the expense of the lives of the workers.

In Nigeria today, it is no longer workers in the factory that are pruned to accidents but those in the white collar jobs are also increasingly exposed to job hazards, they may be unaware of the hazards because of the long gestation of such hazards and those in this category include workers in the financial sector, oil and gas as well as civil service (Fajana, 2012; Ngwama, 2016). However, Fajana (2012) posited that a properly-managed safety culture based on tested principles of workplace safety will produce employees who participate actively in training; these employees will be able to identify and alert one another and management to potential hazards. They develop effective control measures and feel a sense of responsibility for their safety and safety of others. These developments and its attendant fatalities therefore underscore the importance of corporate culture that place value on occupational health and safety in the 21st century Nigeria workplace.

Many definitions of 'leadership' exist in the literature (Yukl, 1989). The term "*leadership*" comes from the Anglo-Saxon word "laedan", meaning to go, and is defined as guiding, conducting, proceeding, or being foremost. Leadership has been defined in terms of individual's traits, leadership behavior, interaction patterns, role relationship, follower perception, influence over followers, influence on task goals, and influence on organizational culture. In organizational psychology it is mostly defined as a group phenomenon (including interaction between two or more people) and an intentional social exertion of influence, which aims at attaining objectives by communication processes (Steger, 2003). Leadership is more than a micro-organizational phenomenon. It goes beyond direct, dyadic relationships between leaders and subordinates; rather, it takes place at all levels of an organisation. It can occur in indirect as well as direct forms. It includes the efforts of the management to reach both short-term and long-term objectives (Gordon & Yukl, 2004). According to Goods (1959), leadership is the ability and readiness to inspire, guide or manage others. Dictionary of Behavioral Sciences (1973) defined leadership as the exercise of authority in initiating, directing, or controlling the behavior or attitude of others, and bring out their consent, those qualities of personality and training, which make the guidance, and control of

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others successful. According to Hemphill (1945), leadership is the initiation of a new structure or procedure for accomplishing the organizational goals and objectives for changing an organization's goals and objectives.

Tannenbaum, Weschler, and Massarik (1961) explained leadership in terms of interpersonal influence, which is defined as influencing people to co-operate towards some goals, which they come to find desirable. Halpin (1956) stated that a successful leader contributed to group objectives and to group relationship. He describes leadership behavior in two dimensions of initiating structure and consideration. Davis (1986) contended that leadership is the ability to persuade others to seek defined objectives enthusiastically. To Hersey and Blanchard (1988) leadership is a process of influencing the activities of an individual within a group in its effort towards goal achievement in given situation?

Koontz and Weihrich (1990) suggested that leadership is influence, that is, the art or process of influencing people so that they will strive willingly and enthusiastically towards the achievement of group goals. Yuki and Vanfleet (1998) stated that leadership is viewed as a process that includes influencing the task objectives and strategies of a group or organization; influencing people in the organization to implement the strategies and achieve the objectives, influencing group maintenance and identification, and influencing the culture of the organization. In line with this position, Terry (1988) concluded that leadership is, essentially, a continuous process of influencing behaviour. A leader breathes life into group and motivates it towards goals. Keys and Case (1990) defines leadership as the process of influencing and supporting others to work enthusiastically toward achieving objectives consistent with these earlier definitions Yulk (1994) defined leadership as the ability of one person to influence a group of persons toward the achievement of common goals. When comparing leadership styles, the focus typically is on the effectiveness of leaders' effectiveness. Effectiveness in turn, typically is viewed as the extent to which the leader's group or organization performs its tasks successfully or attain s its goals (Ardichivilli & Kuchinke, 2002; House & Aditya, 1997; Allio, 2009).

For several decades, researchers have investigated what constitutes effective leader behaviours, what are the pertinent personal characteristics of leaders, and what leader behaviors best suit particular contexts and conditions. Overall, effective leadership has been shown to strengthen employee commitment to the organization and to improve the work climate, enhance innovation and increase productivity (Bel, 2010; Bramming, Kristensen, & Pedersen, 2009).

A corporate culture and leadership framework that truly values health and safety as much as it values productivity, quality and profitability will generate world-class safety results. Creating a safety culture in your workplace is similar to creating a safe home and healthy habits. That is, employment relationship where leaders are seen to spend time of the "shop-floor" and ask workers relevant safety related questions, follow-up with people who are directly affected by workplace injuries to collect and review all incidents, regularly review safety management matrices, and periodically review safety culture matrices through surveying so as to hold managers and supervisors accountable for safety outcomes in the workplace. It is perhaps in consideration of occupational health and safety practices as a cornerstone of corporate social responsibility (CSR) that the full cost of occupational health and safety failure can be most appreciated (see Smallman & John, 2001; Hart, 2010; Carroll & Shabana, 2010). Smallman and John (2001, p. 231) further argued that, at a strategic level, occupational safety outcomes can be considered a "determinant of firm status, specifically corporate image and identity". In this sense, the case for investing in better occupational safety outcomes may represent strategic value to the business, rather than simply an avenue for immediate economic value.

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MATERIAL AND METHODOLOGY

The study employed qualitative research method, involving collection, analyzing and interpreting qualitative data thereby integrating conclusions from those data into a cohesive whole. Qualitative method design was selected to obtain comprehensive information from extant literatures, empirical evidences and from management and employees concerning OHS practices in the Nigerian workplaces. The terms reflecting OHS included like workplace safety, safety management system, relationship between safety and quality, quality and safety, workplace health, industrial health, industrial safety, occupational safety, employee health, safety, work, health, manufacturing safety, working environment, safety committee, and workplace. More than these key terms were utilized in different approaches in line with expected methodologies that any researchers can use. The literature reviewed has attempted to identify related article with occupational safety and health hazards identification or hazards controlling mechanisms. The materials consulted were basically from electronic database and extant literatures. A comprehensive meta-analysis of more than 50 studies, reports, policies, standards and manuals were obtained from some selected databases, research and thematic papers for analysis. Depending on the relevance of the materials, the most important data considering recent publications and reading methodology and results of the papers were considered appropriate. The objective is to focus on how the workplace safety and health hazards are happening, to see current state of the art of the researches summit and to identify the drawback from previously conducted researches. The gaps that exist can be filled by the overall research works considering further research areas.

FOCUS OF THE CHAPTER: OCCUPATIONAL HEALTH AND SAFETY VIOLATIONS AND PROBLEMS IN NIGERIA

According Idubor and Oisamoje (2013) a number of conditions are responsible for the high level of violation of occupational health and safety regulations. These condionalities are identified and explained as follows:

- **Lack of Strict Judicial References:** There is a general lack of strict judicial references and strict human rights compliance is not sufficiently embedded in the national law, such as labor law, non-discrimination legislation, health and safety rights in corporations (HRIRC, 2009). Nigeria, like many other developing countries was subjected to repressive and undemocratic rule for long periods. This perhaps explains the unwillingness and inability on the part of government to enforce compliance to democratic requirements of human rights (Idubor & Oisamoje, 2013).
- **Weak Legal and National Occupational Health and Safety Standard Structures:** The legal structures and policy framework for enforcement of OHS regulations in place in Nigeria are rather very weak, particularly in terms of the interpretation and applications of the law. The standard of occupational health and safety in Nigeria is weak hence even when there is some compliance to safety and health regulations, it is regarded as excessive whereas in reality the compliance is just meeting the minimum requirements. When Corporations violate labour laws, the penalty for such violations is ridiculously liberal for these organizations (Dobro & Oisamoje, 2013). For example, under the Workmen's Compensation Act as enshrined in the 1999 constitution (section 4), the penalty for violating the requirement that an employer must insure every workman employed

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by him against injury or death is: "on conviction for a second or subsequent offense to a fine equivalent to the premium payable for the year in question in respect of the number of workmen employed by him or the sum of N2, 000 whichever is greater". It is only recently that the labor safety, health and welfare bill of 2012 have upwardly reviewed the rates of some violations to a fine of N500, 000 for individuals or N2m in the case of a corporate organization.

- **Corruption and Bribery:** This is perhaps the biggest problem in occupational health and safety violations in Nigeria. The Factory's act for instance clearly stipulates the criteria that are to be met by a desiring organization but most times the standards are not met yet the company has a license duly issued by the regulatory body to operate. The license presupposes that all the conditions have been met and all needed equipment and facilities provided. During yearly inspection of facilities, some companies that operate under substandard conditions are certified okay repeatedly on the payment of bribes. Another aspect of this is that most of these companies either belong to high-ranking government officials or their friends and relatives. Hence even when the inspecting officer is prepared to do his job the right way, he or she may often have "orders from above" preventing any sanction from being placed on the erring companies.
- **Lack of Corporate Responsibility and Accountability:** Many of the corporations that operate in Nigeria are multinational and they have laws that govern their operations in their parent countries. The usual practice in Nigeria is that such laws and regulations are suspended when operating in Nigeria. Such companies and corporation conveniently forget those laws and operate with a shocking lack of corporate responsibility and accountability. The fact that certain unwholesome practices are tolerated, even accepted in Nigeria ought not to prevent these multinational companies from being socially responsible as if they were in their parent country.
- **High Rate of Unemployment and Low Educational Level of the Workforce:** Unemployment rate in Nigeria is alarming so much so that people are ready to work under dehumanizing and unsafe conditions just to have a job. As a result, more labor-intensive industries like agriculture, mining and construction have large workforces, which are mainly poorly educated. This lack of sufficient education usually prevents the workforce from fully understanding the implications of working in hazardous conditions. Even when they do, they are unable to effectively muster a force that will not only demand for but also obtain safer working conditions. More often than not people count themselves lucky for even having the job in the first place so agitating for safer working conditions is not a priority with them. Job security is a luxury for many as most of these companies hire them as contract staff or as causal workers.
- **High Cost of Doing Business in Nigeria:** The entrepreneur in Nigeria is faced with enormous problems in attempting to run a business. Most often than not, they have to provide power station (i.e. electricity) for their business at a very high cost, provide his own water plants and sometimes construct a motor able road to business place. All these tremendously increases the cost of doing business and after spending so much on infrastructure that Government is supposed to provide, therefore, entrepreneurs begins to cut corners on provision of a safe place of work for his employees.

Identifying safety and health problems in the workplace can be as easy as answering basic questions on hazards propensity at work. To determine if there are health and safety problems that need to be addressed and fixed in any workplace, the following questions requires answers:

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- Do you or your co-workers have injuries or health complaints? If so, what types?
- Who has been hurt or is having symptoms of minor or major health issues?
- When do you or your co-workers feel these symptoms?
- Where in the workplace are safety or health problems occurring?
- What are the conditions that are causing the problems?

Nevertheless, the following "Caution Health Hazards" and "Caution Safety Hazards" Tables 1 and 2 provide more information to the various sources of health and safety issues at work.

Table 1.

CAUTION: Health Hazards
Common Types of Health Hazards in the Workplace are: • chemical (asbestos, solvents, chlorine) • Biological (tuberculosis, HIV, hepatitis, molds) • Physical (noise, heat and cold, radiation, vibration) • Ergonomics or Repetitive Strain Injuries (carpal tunnel syndrome, back injuries) • Psychological (stress)
How Health Hazards Enter Human Body • Breathing (inhalation) • Swallowing (ingestion) • Skin (absorption) • Cuts (injection)
Harm Caused by Health Hazards Depends on: • Strength, or potency, of the agent or reagent • amount of the agent that is present • how long you are exposed to the agent • Part of your body that is exposed
Types of Health Effects • Acute: the effect shows up right away • Chronic: problems show up after a long period of exposure and/or long after the exposure ends • Local: only the part of the body was exposed is affected • Systemic: an agent enters the body and affects other parts of the body
Cancer: • Cancer is a term for many diseases in different parts of the body • Carcinogens are agents that cause cancer • There are no totally safe level of exposure to something that causes cancer • Cancer from a workplace exposure may develop 10, 20, or more years after exposure
Sensitization: • People may become allergic or sensitive to some agents they are working with. • Sensitization can develop over time • For example, a health care worker may develop a serious allergic reaction to latex used in gloves
Reproductive Effects • both men and women can be affected by reproductive hazards at work • Reproductive hazards cause miscarriages and birth defects

Source: Safe Jobs Now: An AFSCME Guide to Health and Safety in the Workplace

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Table 2.

CAUTION: Safety Hazards
Common Types of Safety Hazards in the Workplace are: • Slips, trips and falls • Being caught in or struck by moving machinery or other objects • Fire and explosions • Transportation and vehicle-related accidents • Confined spaces • Violence
Slips, Trips and Falls • Bad house-keeping and poor drainage can make floors and other walking surfaces wet and slippery. • Electrical wires along rhea floor pose a tripping hazard • People can fall if they are not provided with fall protection equipment, guardrail, and safe ladders.
Caught in or Struck by Moving Machinery/Objects • Machinery can cause injuries in different ways: • People can get parts of their body caught in or struck by exposed moving parts of machines if they are not properly guarded, or not locked out when being repaired • People can be struck by flying objects from machines without protective guards.
Fire and Explosions • Improper labeling, handling or storage of certain materials can pose a risk of fire or explosion • Every workplace should have an evacuation plan for getting people out of a building in case of fire and an alarm or alert system to quickly inform employees of an emergency • Every worker should be trained on what to do in case of an emergency
Transportation and Vehicle-Related Accidents: • Operators of vehicles and equipment can be injured or cause injury to pedestrians if equipment is unsafe or if adequate training has not been provided • People can be seriously injured or killed after being hit by a vehicle while repairing roads of doing other work in traffic zones. This danger exists when traffic is not properly routed and/or adequate barriers are not placed between the workers and the traffic
Confined Spaces: • An area with small openings for a worker to enter or exit and is not designed for regular work. Examples of confined spaces include manholes, sewer digesters, and silos. There are many hazards in confined spaces. • Workers can become unconscious and die from a lack of oxygen • There may be too much oxygen, or other chemicals that can catch fire or explode. • Poisonous gases and vapor, such as hydrogen sulfide or carbon monoxide, may also build up in a confined space • Confined spaces can also pose physical hazards. They can be very hot or cold, very loud, or slippery and wet. • Grain, sand or gravel can bury a worker.
Violence: • Violence on the job is growing problem. • Homicides are the second leading cause of workplace fatalities. Workplace violence includes physical assault as well as near misses, verbal abuse and sexual harassment

Source: Safe Jobs Now: An AFSCME Guide to Health and Safety in the Workplace

SOLUTIONS AND RECOMMENDATIONS

Appropriate Legal and Policy Framework

Promotion and maintenance of highest degree of physical, mental and social well-being of workers in all occupation is majorly a function of government through appropriate OHS regulations and laws, as well as executive wills of leadership in work organizations. Government must do the needful by enacting standard and comprehensive OHS regulations with appropriate legal and policy framework to monitor strict compliance to occupational health and safety provisions in the country (e.g. National Occupational

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Health and Safety Act 85 of 1993 in South Africa; Occupational Health and Safety Administration – OSHA in Unite States of America; Health Safety Executive –HSE regulations in the UK.

Government and management of business organizations can show leadership in preventing safety and health risks at the workplace (EU-OSHA, 2012). In an attempt to seek solutions to modern workplace OHS issues, EU-OSHA (2012) has identified leadership as a key factor, hence, EU-OSHA (2012) have suggested three key underlying management principles for enhancing safety and health. These are:

1. Effective and strong leadership
2. Involving workers and their constructive engagement, and
3. Ongoing assessment and review

These three points are explored in more detail below:

1. **Effective and Strong Leadership:** Leadership is a condition for success. A preventive approach is only likely to be fruitful if it is supported by the management. A strong and visible leadership and engaged managers at all levels can provide direction and input to this preventive approach (EU-OSHA, 2012). This makes it clear to everyone that safety and health are strategic questions within the company. In practice, according to EU-OSHA (2012) this means that:
   a. Management commits itself to occupational safety and health as a core value of the organization and communicates this to the employees. That is, will "collective will" or "Political will" must be present. It is about (the government, employers and employees) wanting to and doing the right things always.
   b. Managers have an accurate picture of the risk profile of the organization, thereby engaged themselves with continuous appraisal and review of OHS regulations and standards.
   c. management leads by example and demonstrates leadership integrity, for example, by following all occupational safety and health rules at all times;
   d. Management and private businesses/agencies must commit themselves to training and development of OHS professionals in various OHS activities
   e. the roles and responsibilities of different actors in preventing and managing health and safety risks at the workplace are clearly defined and planned and
   f. Monitored proactively through active and continuous awareness OHS regulation and also making OHS certification of the criteria to be fulfilled before businesses are registered by corporate Affairs Commission (CAC) or enlisted into and retained on the Nigerian Stock Exchange (SEC).
   g. Occupational health and safety can feature in the company's sustainability and/or corporate social responsibility strategy and may be encouraged throughout the supply chain.
2. **Involving Workers and Their Constructive Engagement:** The two-way process of involving workers and their constructive engagement is important in the success of management initiatives. Employers must consult their employees about health and safety. This includes: provision of information; instruction and training; and engaging in consultation with workers and their representatives (EU-OSHA, 2012). Depending on national requirements, employers may be required to establish safety committees and the post of workers' representative. Worker participation helps to establish a culture of dialogue. Workers and their representatives are encouraged to take part in health and safety decision-making. Some employers have found benefits in going beyond these legal obliga-

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tions. They encourage active health and safety involvement on a daily basis and also include workers in additional forums such as working groups on specific topics (EU-OSHA, 2012).

3. **Effective Upward Communication:** Is a recommended panacea for management intervention in health and safety at work — workers are listened to and what they say is acted upon. Equally importantly, workers accept their responsibility to follow the health and safety rules at the workplace, and are engaged with management in a constructive and helpful way (EU-OSHA, 2012). This two-way process creates a culture where relationships between employers and workers are based on collaboration, trust and joint problem-solving. And once established this culture has the potential for health and safety improvements.
4. **Ongoing Assessment and Review:** Monitoring and reporting are vital tools for enhancing workplace safety and health. Management systems which provide, for example, the company board members with specific (e.g. incident-led) and routine reports on the performance of health and safety policies can be useful in raising issues, highlighting problems and ultimately enhancing workplace safety and health (EU-OSHA, 2012). According to EU-OSHA (2012) elements of a good assessment and review system include:
    a. Procedures for reporting major health and safety failures to the company board members and owners as soon as is practical;
    b. Systems for capturing and reporting accurate and timely incident data such as accident and sickness rates;
    c. Arrangements for eliciting and incorporating worker views and experiences;
    d. Periodic reports of the impact that preventive schemes such as training and maintenance programmers have on occupational health and safety;
    e. Regular audits of the effectiveness of risk controls and management;
    f. Assessments of the impact that changes such as the introduction of new work processes, procedures or products have on safety and health;
    g. Effective procedures for implementing new and altered legal requirements.
5. Some Recommendations for the Organizations
    a. Adequate training is needed among the workers, as most of the workforce especially the factory workers lack basic education. Pasting just information on the notice board containing information on the operating standard and procedures are not enough as many of them cannot read or write.
    b. Medical screening should be done periodically to ascertain the state of workers' health. Most of the occupational diseases gradually affect the health of the workers without them knowing, if this could be found earlier enough, a lot could be done to salvage the lives of workers.
    c. Management commitment both to better health and safety performance and participative arrangements coupled with the provision for preventive OHS are strategies for ensuring the quality and efficiency of production Support for workers' representation from trade unions in workplaces, especially in the provision of information and training, most non-unionize organizations leave the issue of occupational health exclusively to the management alone. Workers must be involved in the formulation and implementation of OHS policies.
    d. Trade unions should compel their members to comply with OHS rules, understanding its importance to their life. The issues of OHS should be a collaborative effort and a responsibility of all both the management and workers. Accidents and injuries must be reported the appropriate authority irrespective of the treat of the management.

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e. The Federal Ministry of Labor should rise to their duty for periodic inspection of the work environment and Factories in Nigeria to ensure strict compliance of the factories to factories regulations and also pay appropriate compensation to the victims of occupational hazard (Ngwama, 2016).

6. Some Recommendations for Managers
   a. **Plan:** Set the direction for effective health and safety management by setting long-term organizational improvement targets and develop positive performance indicators at both an organizational and business unit level. Add targets that drive improvements in areas of identified risk and return to work performance for the agency. Make occupational health and safety and injury management a standing item on executive meeting agendas. Consider occupational health and safety and injury management implications when developing organizational change and human resource management strategies. Develop a strategy to address the information and training needs of the agency's managers.
   b. **Monitor:** Arrange for updates to be provided to the agency's management group on emerging OSH and injury management issues relevant to the agency's business. Ensure line managers' report to executive management on workplace injuries, measures taken to prevent further injury and the rehabilitation support provided to injured employees. Allocate accountability for workers' compensation costs to a divisional level.
   c. **Review:** Set baseline data so that performance improvements can be measured. Regularly review OHS and injury management systems and audit tools. Engage suitably qualified professionals to conduct impartial in-house audits or reviews, with appropriate employee and employer involvement. Incorporate the scheduling of these reviews into agency corporate governance or audit plans. Provide comprehensive report of OHS performance in the company's annual management reports. Reward excellence in OHS and injury management performance as part of organizational reward and recognition programs.
   d. **Deliver:** Allocate resources to identify, assess and remedy areas of risk. Clearly specify management's OSH and injury management responsibilities in agency-wide OSH and injury management policies and procedures. Develop and then undertake an improvement program for the agency. Apply adopted work health and safety policies and measures consistently throughout your agency, whether over time or in different operational areas within the agency. Identify agency improvement priorities based on achieving targets and controlling injury risks.

FUTURE RESEARCH DIRECTION

Future research direction would be required on how health impact occupational diseases and injuries workplaces in private and public sectors in Nigeria, using qualitative and quantitative research approaches.

CONCLUSION

Health impact of occupational diseases and injuries in Nigeria workplaces is difficult to assess, because there is no consensus on the data. Despite this difficulty, International Labor Organization (ILO) estimates suggest that thousands of people die each year as a result of occupational diseases and industrial

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accidents. This understanding underscores the need for more awareness, education, training, advocacy for corporate commitment, legal policy framework and enforcement of occupational health and safety compliance in the country. Occupational Health and Safety systems in developed and emerging economies such as Nigeria are designed to identify and minimize risks at the workplace. Definitely there is more to gain, and nothing to lose from the implementation of OHS in Nigeria. If all the industries (government {federal and states} and private; small, medium and big scale; formal and informal) in the country embrace OHS, then one can imagine how well the health and well-being of the people will be immensely promoted and improved alongside the numerous job and employment opportunities that will be created on the overall. The relative importance of occupational health and safety in emerging economies is of utmost concern bearing in mind the unusual attendant consequences as occasioned by high rate occupational diseases, accidents, injuries and fatalities. Moreover, workplace in uniquely characterizes by large population, low cost/low knowledge workers, poor literacy rates etc. which makes industrial accidents and fatality almost inevitable. Little wonder, in today's workplaces thriving business communities are learning to seek to create jobs, wealth, good leadership, safe and healthy working conditions that are essential for production of goods and provision of services and minimize industrial accidents and fatalities. Organization that will create workplaces of the future, and sustain the blistering economic growth as well as enhancing quality of life as a whole must seek to institute enduring occupational health and safety systems, driven by appropriate leadership. However, there are many issues that need to be overcome in the areas of awareness, education, training, corporate commitment and leadership readiness, as well as legal policy framework for regulating compliance. There is need for political will, and for all the relevant stakeholders to come together in order to seek the actualization of this lofty vision in Nigeria. All these are very much possible, only if the relevant and comprehensive occupational health and safety laws are passed by the various states and national assembly because globally, the practice of occupational health and safety is mainly driven by appropriate OHS policies and legislation.

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KEY TERMS AND DEFINITIONS

Leadership: Is defined as the exercise of authority in initiating, directing, or controlling the behavior or attitude of others, and bring out their consent; those qualities of personality and training, which make the guidance and control of others successful.

Occupational Health: Is defined as the promotion and maintenance of the highest degree of physical, mental, and social wellbeing of workers in all occupation.

Workplace Health and Safety (WHS): Is a multidisciplinary field concerned with the safety, health, and welfare of people at work. It is a field of healthcare concerned with enabling an individual to undertake their occupation, in the way that causes least harm to their health.

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Chapter 80
Corporate Governance and the Future of Work, Work-Family Satisfaction, and Employee Well-Being

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ABSTRACT

This chapter examines the issues of work satisfaction, employee well-being, and the future of work from the perspective of and as impacted by two prominent and contemporary models of corporate governance. It begins with an examination of work satisfaction and leadership, informed by motivation, leadership, and workplace attachment theories, then discusses how these theories have been impacted by changes in corporate governance. Present-day implications of corporate governance on work satisfaction and well-being are examined, followed by the implications of these considerations for the future of work in the fourth industrial revolution.

WORK SATISFACTION AND LEADERSHIP

This examination of employee well-being and work-family satisfaction starts by looking at the research on motivation, motivation and job design, and leadership. All of these have their roots in the social person era of management and leadership theory, which was ushered in by a series of studies that took place in the Hawthorne plant of the Western Electric Company (Wren, 2004).

The key finding of the Hawthorne studies was that the interactions of people in an organization are important determinants of organization effectiveness and success. These findings led to the human relations movement, which studies the links between productivity and both worker satisfaction and worker wellbeing. It informed motivation theories, leadership theories, as well as workplace attachment theories (Wren, 2004).

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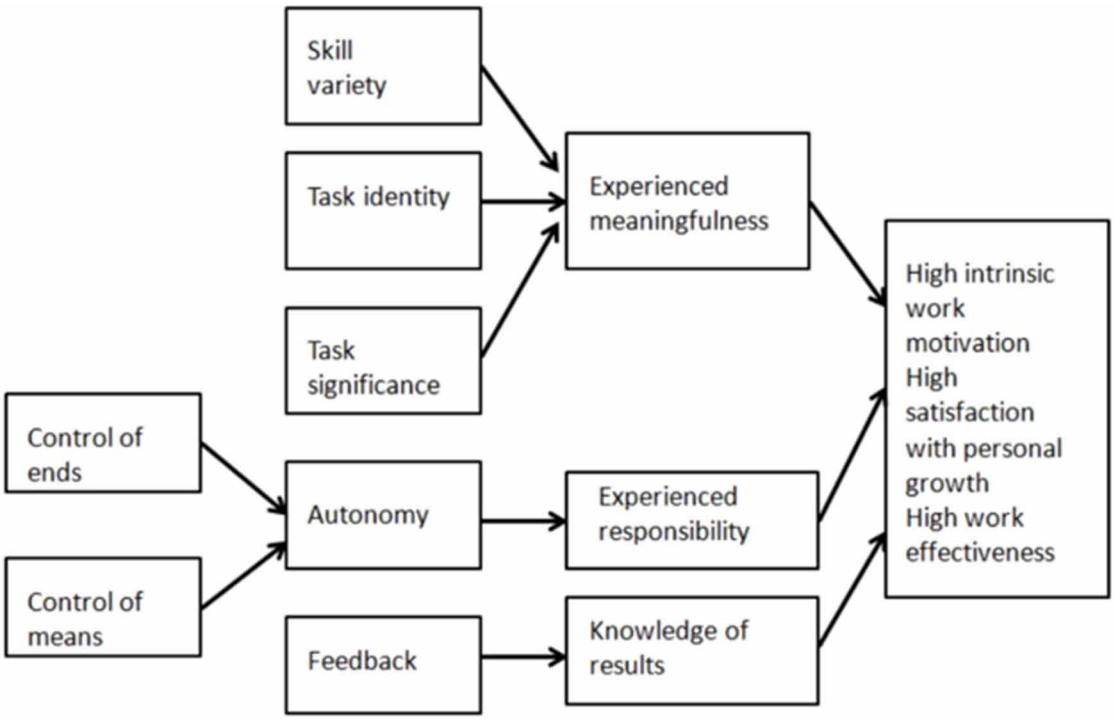
Under the influence of the social person era, motivation theory grew from primarily instrumental-only (extrinsic) to include more explicitly the intrinsic bases of motivation. With extrinsic motivation, there must be either some reward or some punishment on which performance is contingent. It is transactional; essentially, one gets what one pays for. With intrinsic motivation, the actor performs various acts because it is inherently satisfying to perform them; no incentive is required to gain compliance in the workplace because the worker already wants to work at the assigned tasks (Herzberg, 1987).

The notion of intrinsic factors in motivation led to the development of the job characteristics theory (Figure 1), which prescribes what job characteristics need to be present in order for a job to have a high motivational potential (Hackman & Oldham, 1980; Hackman, Oldham, Janson, & Purdy, 1975). Core job characteristics lead to critical psychological states, which lead to worker personal outcomes. High levels of skill variety, task identity, and task significance lead to experienced meaningfulness of work. Autonomy leads to experienced responsibility for the work. Feedback from the work leads to an understanding of the agency of the worker in producing the desired outcomes. Experienced meaningfulness, experienced responsibility, and knowledge of results are the key psychological states that lead to worker outcomes of high intrinsic work motivation, high satisfaction with personal growth, and high work effectiveness. This has led to quite a lot of research and practice regarding job enrichment.

Figure 1. Jobs characteristics model



In the area of leadership theories, the social person era saw the development of relationship-oriented theories (Bass, 1990). Relationship oriented theories posit that the relationship between the leader and follower is an important determinant of the motivation of the worker as well as the degree of affinity

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that the worker will develop towards the leader. French & Raven's (1960) typology of power broadly demarks the power of the leader as having two sources – positional and personal. Positional power comes from the authority one holds that is attached to the position, as well as the ability to reward and punish; it is extrinsic in nature. But personal power arises from the qualities of the leader and of the relationship between leader and follower. Personal power includes both expert power – the ability to solve problems for the follower – and referent power – the degree to which the follower identifies with the leader and is therefore willing to do just about anything the leader wishes. Personal power is intrinsic in nature.

Progression of the relationship oriented leadership theories has led to the development of transformational leadership (Bass, 1999; Bass & Avolio, 1992) and servant leadership (Greenleaf.org, 2011). Transformational leadership is structured around the leader growing the capabilities of followers and then empowering them to take on higher levels of autonomy and responsibility. Similarly, servant leadership is structured around the leader ensuring that all the needs of the follower are met, so that the follower can perform at high levels. Both leadership approaches entail what is essentially a spiritual, connected relationship between the leader and followers.

Workplace attachment theories examine the linkages between job design, job satisfaction, satisfaction with leadership, and organization commitment (Katz & Kahn, 1978). Organization commitment is basically of two types – continuance commitment, in which the worker stays with the organization because the cost of leaving the job exceed the gains of finding a different one, and affective commitment, in which the individual emotionally identifies with the organization and its vision, and will exert great efforts in order to help the organization achieve its vision. Continuance commitment is extrinsic in nature, while affective commitment is intrinsic in nature. Summing these relationships up, essentially, intrinsic qualities of work, coupled with satisfaction with leadership lead to high levels of job satisfaction, which in turn leads to an affective commitment to the organization as well as high levels of performance.

St. Clair (2000) examines organizational attachment from the perspective of psychodynamic theories of human developmental attachment. She notes that infants who have positive relationships with their caregivers develop a secure pattern of attachment and interaction, in which they seek proximity to the caregiver. On the other hand, infants who do not have positive relationships with their caregivers develop an avoidant attachment, in which they seek to distance themselves from caregivers' particularly when they are experiencing stressors in their personal environments. St. Clair further argues that individual attachment styles persist into adult life, and set the pattern for attachment with other adults, and with organizations. However, the attachment style for the organization is predicated on individual beliefs about the motives and attitudes of the organization; that is, if the individual feels that the organization is reliable, ethical, and concerned for the individual's wellbeing, then the attachment is likely to be secure, fostering an affective organizational commitment.

A related concept is the psychological contract, which consists of the expectations that exist reciprocally between employers and employees (Armstrong, 22006; Katz & Kahn, 1978). Expectations held by the employee reflect what they believe the organization wants from them as well as what they want, in return, from the organization. Similarly, the organization has expectations of what is expected of the employee, as well as the organization's responsibilities to the employees.

Armstrong (2006) discusses the model of the psychological contract developed by Guest, Conway, & Briner (1996), which includes causes, content, and consequences. In their model, expectations, experience, alternatives, organization culture, and HRM policy and practice are viewed as causes or determinants of the content of the psychological contract. Content of the psychological contract includes such issues as fairness, trust, and the mechanisms of enacting the contract, which they term "delivery of the deal."

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The unfolding of the content of the psychological contract leads to consequences in terms of satisfaction and well-being, motivation, organizational citizenship, and organizational commitment. One might add that the consequences of the unfolding psychological contract also include the status of employee well-being. Historically, the psychological contract has included a commitment by the organization to the well-being of the employee, and in return, a commitment on the part of the employee to the well-being of the organization..

Synthesizing the foregoing, high performing individuals work at meaningful, empowered jobs, aided and potentiated by relationship-oriented leaders with whom they identify, and exhibit both a secure affective attachment to the organization and high levels of employee well-being. But all of this takes place in a broader context, which includes organization culture, the strategic objectives of the organization, and the manner of corporate governance, and the manner of governance is critical to worker wellbeing and the future of work.

SHAREHOLDER GOVERNANCE AND STAKEHOLDER GOVERNANCE

In 1976, two economists, Jensen and Meckling, published an article titled "Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure" in the *Journal of Financial Economics*. A broad implication of their work suggested that corporate managers were not providing the returns to stockholders that they could provide, the implicit message being that managers should do whatever it takes to maximize corporate profitability. This would seem to mark the beginning point of an explicit focus on shareholder value as a model of corporate governance, in which the focus is on maximizing the rate of return on investment to the owners of the corporation (Ntim, 2018). Nothing else matters, really, in terms of motivation, leadership, psychological contracts, and organizational attachment, because compensation to the top management of the corporation is tied to that metric.

A competing model of governance was proposed by Freeman (1984), who proposed that one must consider the needs and interests of everyone who has an interest in the organization, to include the owners, managers, workers, community, suppliers, and customers (Ntim, 2018). The stakeholder model, he felt, should drive organizational strategy, which should seek to maximize the outcomes of the largest number of stakeholders possible. This would entail, among other strategic concerns, investing in the organization's human capital. Consistent with the philosophies of the human relations movement, this requires that one hire the best people for the job, invest in building their capabilities, and provide a secure and psychologically healthy work environment.

Viewed from the perspective of worker wellbeing, one might put these competing models on a continuum, with shareholder primacy at one end, and with stakeholder primacy at the other. Balance of governance between these models, then, is an important concern. Too much concern for shareholders leaves stakeholders' interests vulnerable, while too much concern for stakeholders leaves shareholders' interests vulnerable. Ho (2010) proposes an enlightened shareholder value model, which, she proposes, transcends the stakeholder-shareholder divide. Under this approach, attention to the interests and concerns of corporate stakeholders is viewed as critical to the long-term creation of shareholder value.

Although the stakeholder model is intuitively appealing and received quite a bit of attention and research after it was proposed by Freeman, many major corporations today, perhaps most, operate within the shareholder value paradigm, within which one way to maximize shareholder return is to minimize the cost of human capital. It seems that this approach is increasingly prominent today.

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Minimizing the cost of human capital has taken the form or outsourcing, offshoring, creation of part-time jobs with no benefits to replace full-time jobs with benefits, and the rise of the gig economy. Corporate donations in the political arena have led to legislation to break the unions (euphemistically called "right to work" laws), and stagnate the minimum wage. In most of the United States today, a minimum wage worker cannot, alone, afford the cost of an apartment that will house two people. Increasingly, workers must rely on public assistance in order to make ends meet. Meanwhile, executive salaries have risen to extreme levels, as have shareholder returns, resulting in widespread concern in the U.S. and elsewhere of wealth inequality (Benhabib, Bisin, & Luo, 2017).

Present-Day Implications of Governance for Satisfaction and Well-Being

The bulk of the most influential research on behavior in organizations was done before the shareholder paradigm was predominant. In evaluating the wisdom of the behavior in organizations findings reviewed above, one must take into account the psychological contract between workers and organizations that were present then, versus today. Corporate governance ran more along the lines of stakeholder concern than along the lines of shareholder concern. The psychological contract then was one of mutuality, recognizing that the worker is a valuable asset to the organization that must be protected, nurtured, and developed.

One might speculate that the shift from high stakeholder concern to high shareholder concern would predict an erosion of the mutuality and trust in the psychological contract. Although research in 1998 suggests no significant erosion of the psychological contract (Armstrong, 2006), the psychological contract under shareholder governance, by and large, is purely instrumental. Value is to be extracted from the human resources by any means necessary, including those that are not favorable to the workers. With mutuality out of the picture, this calls into question the generalizability of much of the organizational behavior research that was done before shareholder governance was prevalent.

Armstrong (2006) summarizes three research projects that reviewed the state of the psychological contract, one published in 1997, another in 1998, and a third in 2004. The pattern that would seem to emerge from this research is an erosion of the mutuality and trust of the psychological contract. In the 1997 survey, 90% of workers surveyed felt that they were fairly treated by their employers, while in the 1998 survey that figure was 67%. In the 1998 survey, 88% felt very secure or fairly secure in their jobs, while that figure was 63% in the 2004 survey. In the 1998 survey, 64% felt pay was fair, but in 2004 41% reported that they were either dissatisfied or very dissatisfied, with 26% reporting feeling neither satisfied nor dissatisfied (Armstrong, 2006). this could reflect an erosion of employee perceptions of pay. More recently, a Eurobarometer survey (April 25, 2014) of the 28 European Union states found that 53% of respondent workers felt that their working conditions were good, though 57% of the respondents also felt that their working conditions were not as good in 2014 as in 2009. In the years since, there has been a growing perception, particularly among the U.S. middle class, of growing wealth inequality, as well as an erosion of the buying power of workers' wages.

As stated above, organization commitment is the attachment that a worker feels towards the organization, and that it runs along a continuum, ranging from purely intrinsic to purely extrinsic. At the intrinsic end, it is termed *affective commitment*, while at the extrinsic end it is termed *continuance commitment.* Affectively committed workers are emotionally attached to the organization; they identify with the goals of the organization and want to be an integral component in the organization attaining those goals.

Continuance commitment is purely instrumental. The worker essentially does a cost-benefit analysis of her/his role in the organization, and connection to the organization and its goals is predicated on how

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beneficial that is to the worker. When the combined intrinsic and extrinsic costs of staying with the organization exceed the cost of leaving, such as loss of pay and benefits an the psychological costs of leaving, the worker is likely to attrite.

Affective commitment, with its intrinsic focus, likely is an implicit assumption behind the research on the relationships between motivation and leadership, as well as research on job design, job satisfaction, satisfaction with leadership, and organization commitment. In organizations with a shareholder focus, the psychological contract is largely extrinsic, which calls into question both the findings of the research on worker satisfaction and wellbeing, and the prescriptive models based on that research.

So, of what value is all that research, if it is not generalizable to shareholder organizations? One may take note of the ideal states which that research describes, retain those ideal states as desiderata, and continue to examine the same relationships via research in organizations with a more shareholder orientation. One may also conduct research in organizations operating under both governance paradigms in order to more explicitly map the impact of governance model on those variables. In the end, noting the convergence of research done with respect to worker outcomes under both paradigms, it will be possible to compare the two governance paradigms in a meaningful, empirical manner.

Implications for the Fourth Industrial Revolution – the Future of Work

The foregoing discussion sets the context for considerations of the impact of the fourth industrial revolution (4IR) on the future of work and worker wellbeing. It is a future with mixed possibilities, with this era posing both threats and opportunities to workers and the future of work. Various possible outcomes are being predicted by expert futurists, including unemployment as high as 80%, stable job numbers but with increasingly unstable jobs (United Nations, 2018), and workers using information technology and social media to mobilize the workforce to mass action (Sourcewatch, 2017).

Overview of the Fourth Industrial Revolution

Philbeck and Davis (2018) afford a cogent overview of the fourth industrial revolution (4IR), noting that it builds off of the data-centric and rapid-communication capabilities developed in the third industrial revolution (aka, the information revolution), but while taking for granted the digital technologies which have enabled it. While the information age gave us knowledge on demand, 4IR gives us technologies and technological applications on demand. At the heart of 4IR lies artificial intelligence, robotics, advanced materials and materials fabrication, neurotechnology that interfaces between machines and the brain, genetic sequencing and modification, all of these "integrated into our physical, social, and political spaces, altering behaviors, relationships, and meaning (p.18)." 4IR poses both threats and opportunities for worker wellbeing and the future of work.

Threats

Threats to workers and the future of work arise in part from the advent of robotics, artificial intelligence, and the interaction between these. The incorporation of these poses a tremendous threat to the future of human work. Robots are already automating many low-skilled jobs, while artificial intelligence is automating many jobs that call for human-like judgment. Soon, a robot will be available for less than the annual cost of a full time human worker, capable of doing the workers' jobs. It will not require be-

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ing paid, will never call in sick, can work virtually always without a break or time off. Large retailers like Wal-Mart are rolling out self-checkout kiosks, powered by advanced enterprise database systems, relegating low-skilled cashiers to the unemployment line. Autonomous vehicles are already in operation, and will become increasingly common, displacing millions of people who drive for a living. Artificially intelligent applications read CT scans with a higher degree of accuracy than the average radiologist, for a fraction of the cost. And artificial intelligence has acquired the ability to be self-teaching, and self-programming. This means artificially intelligent systems will soon be able to take over human jobs with high intellectual requirements.

Although estimates of future unemployment due to automation and artificial intelligence vary, it is widely acknowledged that there will be substantial job displacement, particularly for unskilled workers and women (Ugurlu & Pajo, 2019). An additional threat arises from business owners' recognition of these effects on the willingness of workers to work for lower real compensation and in less secure jobs, particularly in organizations that align with the shareholder governance model. And this is visible in the workplace today, via stagnating compensation, loss of job security, and rising concern for wealth inequality (United Nations, 2018). Further erosion of worker security likely would also erode the quality of work, work satisfaction, and even possibly general life satisfaction.

Opportunities

4IR, particularly in communications and social media, reflects among other things a revolution of consciousness, an enabling of the noosphere, or collective consciousness of humankind (Van Cleave, 2012). These technologies bring a tremendous structural fluidity to human interactions in the present, such as the emergence of social media as an instrument of mass human action (The Guardian, 2011).

The labor movement of the late 1800s into the early 1900s were a mass action that brought about workplace reforms that were needed to save workers' lives, and to give workers a decent standard of living. The unions, as well as the gains they won for workers, have been severely undermined over the last thirty years (Adler, 2006). But now, the information technology and social media are enabling mass actions on a scale unimagined by the union organizers of a hundred years ago, in part via a new form of organization, the self-assembling dynamic network (Matai, 2011).

A self-assembling dynamic network is a collective of individuals, sharing a common interest, who spontaneously come together, usually without formal leaders, who enact large scale change, then dissipate. Notable examples of this are seen in Arab Spring (The Guardian, 2011), and in the yellow vest movement in France (Al Jazeera, 2018; Cigainero, 2018). So while there are many threats to the future of work, the technology also offers this important opportunity.

Further, while lower skilled jobs will continue to be eliminated by automation and artificial intelligence, new jobs are being created in the areas of programming, technical support, and systems engineering (Ugurlu & Pajo, 2019). From the perspective of the job characteristics model (Hackman & Oldham, 1980; Hackman, Oldham, Janson, & Purdy, 1975), these will be jobs that are inherently high in intrinsic motivational content. However, unskilled workers will need to be trained (Ugurlu & Pajo, 2019), and not all workers possess the cognitive capacity needed to succeed in the training and on the job.

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ONE POSSIBLE FUTURE

Assuming that technology and artificial intelligence do cause widespread unemployment, perhaps in the 40% range predicted by Pistono (2012), it might become necessary to tax automation (Abbott & Bogenschneider, 2018; Gedik, 2018; Zhang, 2019), and from those taxes institute a guaranteed minimum income for all. That minimum would be sufficient to meet most basic needs, but not so much that people would not be willing to work for the additional income. The concept of "working for a living" would become an historical footnote, with people taking on employment in areas in which they have a particular interest, calling, or passion, and in which they find a high degree of meaning and satisfaction. Alternatively, a guaranteed minimum income would free them to serve their communities in various ways. This being the case, the previous research on workers and organizations, predicated on a psychological contract with intrinsic qualities, would regain relevance.

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Chapter 81
Management of Intercultural Relations in an Intercultural Organization

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ABSTRACT

The chapter aims to reflect on the management of intercultural organizational relations. It explains the transition of homogenous organizations into the culturally heterogeneous organization and compares multiculturalism with cross-culturalism in its ability to harmonize the principles of cultural diversity with universal ethical principles. It explores the process of creation of a third culture to foster understanding and acceptance among diverse teams. It attempts to establish the impact of intercultural interactions/relations on the effectiveness of a diverse team of individuals interacting in concert to achieve common goals. The work also underpins some analysis of the creation, development, and management of organizational intercultural capital. Finally, the emergence of the model of strategic management of an intercultural organization focused on learning and training for proper operationalization and implementation is proposed, and some challenges that could antagonize the teams are looked into and proposals are formulated.

INTRODUCTION

In the recent years, economic globalization, increasing complexity in organizations and high levels of uncertainty has contributed to the development and growth of institutions and organizations that are more diverse and multicultural (Cox, 2001, 1993, 1991). While diversity has always been present in organizations, even in those that appear to be homogenous, the level of differences has increased manifold due to

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the opening up of international borders and the globalization of the entire production and manufacturing process. Thus, these newly evolved international enterprises have to constantly work on improving their ability to compete in an extremely challenging environment due to globalization, cultural diversity and shrinking of resources. Strategic Management is the key to ensure accomplishment of tasks as diverse teams are now called to perform in the context of globalization (Gardenswartz & Rowe, 1998). This has opened up discussions around the concepts of multiculturalism, with special emphasis on developing higher levels of sensitivity to cultural diversity amongst individuals in intercultural organizations.

The intercultural organization is located in two-way interactions between the reality of society and organizations. It is in this space that the essence of cultural diversity is rooted. The intercultural organization is a resource of culturally diverse individuals in terms of racial and ethnic heritage, gender and sexual orientation, age, physical ability, professional group, etc. The diversity of cultures can be explained from perspectives such as philosophy, emerging systems of complex interactions between cultures and human habitat and in terms of intercultural contacts. Cultural diversity is viewed as dynamic interactions between people of various ethnic-racial, social, religious and cultural backgrounds that are essential to the promotion of intercultural organizations. Religious expression is an important component of the intercultural organization as more often than not an individual's cultural values and beliefs are linked to their religious beliefs.

DEFINING AN INTERCULTURAL ORGANIZATION

The intercultural organization is defined in this analysis as a set of contacts and interactions that often occur among the various members of an organization having different backgrounds and cultural identities, in terms of language, values, attitudes, thoughts, emotions, actions, etc., and these, in turn, define their ways of being, thinking and acting, and developing an understanding of different lifestyles.

To understand the notion of intercultural organization it is essential to understand the concept of subjective culture rather than objective culture. Subjective culture is understood as the intangible part of the culture, which could include a pattern of beliefs, behaviours and values that are maintained by groups of people interacting. An understanding of this subjective culture allows analyzing the interactions between the cultures and offers an epistemological foundation for the differences existing between the local and international culture that goes beyond the historical, economic and political environment (Bennett, 2001a).

Intercultural interactions in organizations are mutually reciprocal between and within cultures. The prediction of the intensity and meaning of the intercultural relationship of the group itself towards its members has been the subject of various studies (Noesjirwan, 1978; Argyle et al., 1986). A study on Intercultural verbal communication relations (Gudykunst & Toomey, 1988) has developed various styles of direct communication. For foreigners, the development of intercultural relations with indigenous people is a complex task (Simard, 1981). This may suggest how the number of links with subjects of the indigenous culture can be an indicator of intercultural adaptation and of the level of intercultural competencies held by the subject (Kim, 1988).

The concept of intercultural adaptation is linked to the intercultural transition phase. The conceptual study of intercultural adaptation can be divided into two large domains, psychological and socio-cultural. The psychological domain revolves around the psychological transition. This refers to the effective and emotional components related to mental health like the general well-being, satisfaction with life etc. On

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the other hand, the socio-cultural domain refers to the behavioural transition. This focuses on the social competence and the ability to interact effectively in the host society (Ward et al., 1999).

The modernization process aimed at imposing homogenization and standardization of behaviours, attitudes, ways of being etc. Intercultural organization moves in exactly the opposite direction by promoting heterogeneous behaviours, attitudes, ways of being, and to assess resulting prejudicial stereotypes and mental structures.

DEVELOPING INTERCULTURAL SENSITIVITY THROUGH CULTURAL INTEGRATION IN INTERCULTURAL ORGANIZATIONS

People in organizations who are perceived to belong to two groups can develop intercultural sensitivity if they recognize that people of both cultures get the same fair deal from the organization and that no culture is considered superior to another. The development of organizational intercultural sensitivity designed to experience the cultural differences provides an understanding of how people construct and live. Intercultural sensitivity in organizations is a relevant component that complements the development of the mindset and the set of required skills of its employees. And it is these competencies that will give organizations an edge over their competitors.

The DMIS framework of intercultural sensitivity, proposed by Bennet is one of the most recognized contributions that delve into the dimensions of intercultural competence. This model tries to explain how people engage with others and react to cultural differences, beginning with denial the individual transitions to the acknowledgement of differences, minimization, followed by acceptance, adaptation and finally integration of differences. Mere adaptation will not ensure intercultural competence. The integration process by which individuals will understand, accept and imbibe in themselves the values from other culture by combining it with their own values will help build effective culturally diverse teams. The method of the Intercultural Development Inventory supports the conceptual, theoretical and methodological framework of Development Model of Intercultural Sensitivity to evaluate the intercultural sensitivity of people in organizations. Intercultural organizations occur because of the structures and behaviours that facilitate their members to act without prejudice or cultural bias (Dubrin, 2003).

In addition to the trials of global economic integration, religious and immigration issues pose a serious challenge to an organization dealing with a multi-cultural environment. It's responses to such challenges, in turn, decides its evolution, growth and the prospects it presents for the development of the society. Corporations seeking to operate in global markets assume that its people should know how to deal with the needs, desires and fears of its stakeholders like employees, customers, consumers, suppliers, governments, etc., in this multi-cultural environment, whereby each of the agents will try to accommodate each other. However cultural differences may most times be the source of confusion and misunderstanding in the Intercultural interactions in organizations. One of the most widely used frameworks to analyze the impact of the cultural differences on the values of members and their behaviourespecially in the work context developed by Hofstede is built around dimensions like individualism/collectivism, tolerance for ambiguity, social roles, time orientation, the distribution of power in the society etc.

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EMERGENCE OF THE THIRD CULTURE THROUGH INTERCULTURAL INTEGRATION

The cultural differences between people of different cultural backgrounds working in the same team or project are an opportunity for synergy. Each of these individuals has a responsibility to adapt and get to model behaviours that are competitive across cultures creating a third culture throughout the organization. The integration process enables creation and development of the hybridized third culture in the intercultural organization. The third culture has a set of new beliefs, values etc that are mutually acceptable and fosters positive relationships among individuals from diverse cultures within the organization (Casmir, 1997).

Contacts and cultural interactions in organizations mandatorily take place on the job and in social contexts, regardless of the interests of individuals from different cultures to meet other people with different cultural backgrounds (Allwood et al., 2007). Such intercultural interactions in the organizations foster comprehensive mutuality, reciprocity and equality. Intercultural contact is as much a condition as a result of the functionality of intercultural relations in organizations that support and strengthen working environments, where members maintain equitably cooperative and socially acceptable relations with the rejection of negative stereotypes (Aneas, 2015). In an intercultural organization, business objectives and universality of ideas come together, leaving room for further cooperation between the organizations.

RELATING INTERCULTURAL CAPITAL WITH ORGANIZATIONAL SUSTAINABILITY

The term cultural capital proposed by Pierre Bourdiew viewed it in an economic sense as the repository of cultural knowledge of individuals in the society. Cultural capital thus consists of the store of social assets like education, skills, attire etc. that helps individuals by giving them mobility in a diversified society. Intercultural capital, however, consists of the stock of forms and types of symbolic capital fashioned from several cultures. Such intercultural capital is represented through the thoughts, emotions, values, experiences, skills and competencies etc. that gets revealed in the ways individuals be, act, think etc. The background and cultural features that shape the identities of the organizations, behaviours, values, attitudes, perceptions, etc., influence the development of organizations. This store of values upon which the structure of each society is characterized and that makes it different from others is referred to as cultural capital (Throsby, 2005). Among the core values that are considered desirable in organizations are integrity, power levels/distances, the purely cultural aspects and respect (Himmelstern, 2007).

Intercultural experiences are internalized in individuals with common meanings to generate organizational synergy and empathy thus positively influencing the performance of intercultural groups. Diversity in organizations and the multicultural diversity in intercultural organizations have an impact on competitiveness and organizational performance (Cox & Blake, 1991; Cox, 1991, 2001; Milliken & Martins, 1996; Thomas & Ely, 1996; Williams & O'Reilly, 1998; Pelled et al., 1999; Bezrukova et al., 2003; Jackson et al., 2003; Joshi & Roh, 2009). Intercultural organizations ensure the mix of individuals with diverse ethnic and racial origin, gender, religion, beliefs, values, etc., with the ability to influence its internal work environment in accordance with the society in which it is immersed. Organizations with a wider range of the population are more sensitive to understand the nature of intercultural organizational needs, desires and fears of prospects and customers and therefore provide satisfaction, services and

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products of superior quality (Adler, 1983; Griggs, 1991; Gasorek, 1998; Gardenswartz & Rowe 1998, 1994; Susaeta & Navas, 2005).

In this atmosphere of cultural diversity, the interactions among individuals to implement the corporate and business strategies, policies and plans results in the development of joint projects results in tackling quickly, problems that would otherwise require long periods of time to resolve. The cultural capital offers sustainability to organizations by drawing upon the resources; the technical expertise and intercultural competencies that are picked up during the interaction of different national cultures give the organization an edge to compete.

DEVELOPMENT OF INTERCULTURAL TEAMS

The development of intercultural competences is the result of complex processes that require time and abundant resources. Organizations and corporations that will dominate the 21st-century global market are those who are able to realize their full potential of intercultural capital in human resources and group teams. The development of intercultural competencies has implications for people and organizations that have to work in intercultural environments and global contexts.

Distefano and Maznevski (2000) typify the intercultural teams as being destroyers, equalizers or the creators. Destroyers are basically disasters since team members do not trust each other and destroy value. Equalizers do not create any additional value but team members successfully smooth over any potential conflict to meet the objectives of the organization. The creators are the exceptional performers who recognize the explicit differences, appreciate it and to a large extent even nurture these differences. Such intercultural teams benefit from cultural synergy.

The ethnocentric approach wherein the recruitment to key positions in the international organization is almost always from the parent country, contrasts completely with the acquisition of intercultural organizational capital because it is based on prejudices and stereotypes rather than cultural generalizations based on serious research on culture.

The processes of creation, capture, development, integration, retention and administration of this intercultural capital, clearly go beyond the geographical frontiers. It is in this sense that Alcázar et al. (2012) opines that diversity of human capital is a concept formed by demographic attributes such as age, gender, nationality, education, type of training, status in employment, and functional expertise. Hence there is a direct relationship between human capital attributes including knowledge, experiences, cognitive styles & values and demographic distinctions in a team.

The policy-oriented intercultural organizations provide intercultural diversity training programs and other human resource development initiatives to strengthen this area through a process of integration of diversity training into other corporate training programs and inclusion of this content in every sphere in the organization, for instance including questions pertaining to cultural awareness in the recruitment process, discussions on cultural differences and its impact on sales at different times in different regions.

INTERCULTURAL TEAMS IN MULTICULTURAL ORGANIZATIONS

Multiculturalism as a dynamic and dialectical process recognizes the existence and convergence of various cultures in a space between the local and global processes that intersects social and cultural networks

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articulating personal and collective identities (Hall, 1973). Organizations that promote multiculturalism allow a diversity of individuals from various cultural groups with equal status to function side by side, manytimes though isolated from each other.

In a multicultural organization, tolerance is valued and differences are celebrated in cultural expressions but the deeper differences of power are left untreated and exchange among the different groups only focuses on the representation, i.e., interactions are required only at a superficial and friendly social interaction level (The United Church of Canada, 2011). A cross-cultural organization moves beyond the superficial level and promotes learning and sharing of various cultures. An Intercultural organization works at a much deeper level by helping to forge strong relationships such that they understand and respect each other's cultural backgrounds.

ANALYSIS OF ORGANIZATIONAL INTERCULTURAL RELATIONS IN DIVERSE TEAMS

The theory of social penetration analyzes the dimension of intercultural relations (Altman & Taylor, 1973) as in the case of relational networks from the intercultural perspective that provides feedback to the new environment. This theory also referred to as the onion theory explains how people develop relationships with people across cultures gradually as they involve in self- disclosure at various levels beginning from superficial to the intimate, which is akin to peeling off the layers of an onion to get closer. The rise of electronic media has made it easier and faster to develop economic contacts and cultural interactions in organizations. Individuals in organizations establish contacts, meetings and cultural interactions, facilitated by organizational mechanisms not only of groups and teams but as in other gatherings, joint projects, negotiations, etc. Interactions in social structures are defined by values such as justice, freedom, equality, mutuality, diversity, respect, understanding, acceptance, peacebuilding, etc.

The analysis of the intercultural context of a company or organization must begin by looking at the objective of the verifiable and operative symbols and continue with the subjective and unconscious aspects of the members that share the same cultural background while closely monitoring their social and functional relationships that identify interculturality. Intercultural relations are analyzed from the perspective of the relationships between people of different cultures and between groups of cultural diversity that interact with each other. Likewise, interculturality can be analyzed from the inertia and dynamics as determinants of the relationships between cultures. As the word itself denotes inter meaning between, interculturality is concerned with the relations between cultures and interculturality in organizations can be analyzed by observing the conditions in place to promote the development of relational networks between various cultures.

The analysis of the intercultural organization phenomenon is based on the understanding of the interrelationships in the cultural diversity of individuals interacting in concert to achieve common goals. Intercultural relationships in organizations start with the first contacts and intercultural encounters with people who have a variety of ethnic and racial attributes of color, creed, gender, religion, etc. The analysis of intercultural organization offers tools for strategic management of ethnic-racial, religious, gender and sexual, differences of individuals who are members of organizations. Intercultural organization strengthens when reference frameworks of most universal cultures under trans-disciplinary approaches of sociological research, communication, anthropology, economics, etc., are analyzed because they provide knowledge and methodological tools for analyzing cultural differences and contrasts. However,

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the complexity of the analysis of cultural differences in cultural diversity is a limiting factor for inter cultural management organizational groups and teams without having the tools that the precise situations call for in specific cases.

The analysis of cultural interactions are erroneously based on generalizations that do not always have specific applications to culture groups, such as cognitive style that can be concrete or abstract, communication style that can be high and low context, the use of language in the rituals of verbal greetings, nonverbal behaviors in visual contact, etc.

EFFECTIVE INTERCULTURAL INTERACTIONS

There has been very little research done on why and how some individuals are better off in culturally diverse situations. The multidimensional construct metacognitive CQ developed by Earley and Ang (2003) is one among the very few contributions that tries to address this need. CQ is nothing but cultural intelligence and is defined as the ability of individuals to function and manage effectively in intercultural interactions through cognitive, metacognitive, motivational and behavioural components. Therefore, intercultural organization reflects the metacognitive i.e., the mental capacities of the individual members used to acquire and understand cultural knowledge, which also includes knowledge of individual thinking that originates from the culture of the individual (Flavell, 1979).

While the metacognitive CQ focuses on the higher order thinking process, the cognitive focus on development of knowledge of the varied customs, practices and treaties in different cultures that arise due to their varied educational and personal background. People with high cognitive CQ understand clearly the differences in cultures because of their knowledge of the legal, social and economic aspects of various countries and their cultural values. Motivational CQ is defined as the ability of the individual to learn and the attitude developed to manage culturally diverse situations effectively. People with high motivational CQ possess the innate desire and the drive to deal with cross-cultural situations owing to their self-belief, i.e., confidence in their own effectiveness. Similarly, individuals with high behavioural CQ will speak and act in the appropriate manner during their intercultural interactions.

Mono-culturalism and little intercultural interactions in organizations as a phenomenon coupled with prejudice can lead to a variety of dysfunctions and organizational deficiencies. To reach the level of intercultural organization requires moving from an exclusionary mono cultural organization of minorities to an intercultural organization inclusive of all groups and minorities around values-centred in the diversity and intercultural relationships between members.

The various dimensions and components of the national culture are factors that influence decisively in the interactions, relationships and behaviours among individuals and organizations. The determining factors in the intercultural relations of the dominant groups are the expectation of result, intra-group bias, and similarity (Piontkosky et al., 2000). These relational factors can become more important than the technical factors as they affect strategy and management (Trompenaars, 1993), and therefore organizational performance (Whiple & Frankle 2000).

Differences of culture in organizations have an influence on the contacts and interactions of intercultural organization (Hamada, 1989; Garsten 1993). Organizations seeking to reach diverse consumers and markets (Gomez-Mejia et al., 2001) require the creation and development of an organizational culture focused on diversity and plurality that is based on the promotion of values, behaviours, attitudes, activities, ceremonies and rituals that encourage intercultural organizational processes. The organizational culture

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or corporate culture is rooted in the values of the founders converted into common practices and rules for members of the organization, where differences are understood and valued (Hofstede, 1999, p. 19).

CHARACTERISTICS OF INTERCULTURAL ORGANIZATION THAT FOSTERS INTERCULTURAL RELATIONS

The intercultural organization offers conditions of support and help to its members to adapt socially, to integrate culturally and improve their psychological health and their professional competence by exhibiting a high level of acceptance of differences. Members having an equal status, free of negative stereotypes, cooperative relationships with a high level of acceptance in a climate of social support are necessary prerequisites for improved intercultural relations. The intercultural organization facilitates creating inclusive work environments, to respect and promote its vision, cultural values and sustainability of local communities where they operate, to establish more effective cooperative relations with investors and suppliers, to promote investment in social programs, to meet and satisfy the needs, desires and specific fears of the different segments of prospects and customers.

The intercultural organizations are characterized by sidelining of individual subjectivity, tasks and labour relations, analyses of contextual influence, promotion of learning processes, data analysis and complex decision-making and the integration of cognitive, emotional, attitudinal and behavioural components. The intercultural company has among other elements of its organizational dimension, the activities it carries out, the coordination of its components and its interdependence with its environment. In the specific case of an intercultural organization, the above elements are determinants that foster attitudes of respect, transgression, relativization and negotiation of organizational norms.

Cognitive, emotive determinants and individual aspects are closely linked to intercultural relations. Cognitive determinants refer to the accumulation of information and knowledge that a person has in an intercultural relationship, many of which have a level of uncertainty that affects the same relationship (Gudykunst & Shapiro, 1996). However, in the intercultural organizational processes cognitive and emotional elements overlap. Intercultural processes benefit from the changes through interaction with others (The United Church of Canada, 2011).

The socio-cultural characteristics of the members of an organization are crucial to the diversity of relationships and interactions in intercultural organization, which can identify differences in membership and group memberships that are significantly different in their culture, their characteristics and personal attributes (Cox, 1994; Harrison et al., 1998; Milliken & Martins, 1996). The interaction between people of different cultural groups helps them to learn and grow together, develop interactions, share knowledge and experiences with each other. The personal characteristics that manage intercultural relations influence the adaptation of people to the new culture (Kealy & Ruben, 1983; Caligiuri et al., 2000). Some of the factors that influence the control and management of effective processes for intercultural adaptation are the openness of mind, flexibility and predisposition to change. Flexibility in intercultural relations fosters effective and creative responses. Adaptation to a new cultural environment requires better intercultural relations, particularly good communication (Kim 1988, p. 35).

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APPROACHES AND MODELS OF INTERACTIONS IN INTERCULTURAL ORGANIZATIONS

Primarily three different approaches are used to research communication or interactions/contacts in intercultural organizations that include the interpretive approach, the social scientific approach and the critical approach. As per the social scientific approach, the interaction patterns within the organization are studied, understood and explained using some measurement of key variables. The interpretive approach emphasizes the context in which the interactions are manifested. The interactions are explored from the perspective of the employees from various multicultural communities. The critical theory approach analyzes the interactions under historical contexts of power. It involves the collection of data of a qualitative nature to understand the differences that exist.

Research has identified three different perspectives on workforce diversity, the integration and learning perspective, the access and legitimacy perspective and the discrimination and fairness perspective (Ely & Thomas, 2001). Such studies have shown further that organizations that practice intercultural diversity within teams tend to be more effective (Cox & Blake, 1991), while diversity can also reduce effectiveness unless the performance efforts are integrated. Such integration is possible through communication (Maznevski, 1994).

The intercultural organization is expressed in contacts and interactions between people with different cultural backgrounds. The use of intercultural empathy generates an appropriate temporal behaviour to the cultural objective. Intercultural empathy is related to the change of frameworks which involves temporarily removing their own assumptions about global views and temporarily replacing them with a different set of values and beliefs. These intercultural organizational capabilities that emphasize intercultural interactions and exchanges of information among team members working from different cultures, allow questioning the cultural assumptions and make adjustments in mental models (Nelson, 1996) with a high impact on organizational performance.

The model of intercultural relations from the social perspective influences the effectiveness of intercultural relations (Kim, 1989). The process of social relationship that leads to intercultural effectiveness is the cultural adaptation of various components and dynamics of a person that allows them to adapt to a culture that is not their own. The intercultural and interpersonal relationships determined by the proportion of intercultural contacts encourage processes of integration and intercultural adaptation. The evolution of the mood of a foreign person in a situation of interculturality oscillates between the initial euphoria and depression that improves when he adapts to the new intercultural environment.

The interculturality model of Ward (1996) based on the works of Lazarus and Folkman (1984), Ward (1988) and Berry (1994), incorporates personal and contextual variables that show the complexity of intercultural relations between people of different cultural backgrounds that demand answers at cognitive, affective and behavioural levels. Ward proposed the adaptation frameworks of stress and coping, cultural learning and social identification. The model of cultural integration developed by Berry, Trimble and Olmedo (1986) and extended by Berry1994) considers two dimensions in the results of intercultural relations or acculturation: cultural identity and relations with other groups. Assimilation into the dominant culture, separation from the majority culture and maintaining own identity, integration with the dominant culture yet maintaining individual identity and finally marginalization which involves remaining detached from both own and dominant cultures are four acculturation strategies proposed by researchers (Berry1997). In the model of threats to intercultural relations of Stephan, Stephan and Gudykunst (1999: 62) based on the conflict theory of Bobo (1983), distinguishes the real threats from

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the symbolic or perceptual, anxiety and negative stereotypes. Intercultural skills that reduce these factors favour better intercultural relation and globalization processes raises the need for cultural integration that is in contradiction with the model of intercultural organization based on multiculturalism. Intercultural interactions of organizations deepen more in cross-cultural models rather than the cross-cultural models.

MANAGING INTERCULTURAL ORGANIZATIONS

Management of intercultural organizations is manifested in the very nature of intercultural relations in organizations that operate in environments of globalization and the resultant boundary-less competition. This evolutionary process of managing an intercultural organization is expressed in developing and adaptation of sensitivities of a global culture of organizational behaviours, processes, products and services in tune with the communities they seek to serve. Organizational management is an imperative of intercultural organizations, especially companies that are at the forefront of dealing with global intercultural issues. They have already begun work on intercultural management and potential experience in tools to try to accomplish common goals and to work in a global environment. Entrepreneurial collaboration, targeted deliberately, encourages intercultural organizational foundations for peace.

The psychological, social, cultural and economic welfare of the members of an organization are the objectives of an intercultural organization. Stephan, Stephan and Gudykunst (1999) developed the theory of intergroup threat that speaks of the psychological-emotional processes that individuals go through when they perceive another group to be in a position to harm/hurt them. Intercultural organizations distinguish consciously perceived real threats to economic, social and political system symbolic or different perceptions of moral, religious and other values derived from the interpersonal and intergroup relations and negative stereotypes. In managing organizational intercultural relations, psychological health harmoniously integrates cognitive, emotional and behavioural components (Alvarez, 2015). Intercultural relationships are linked psychologically with the anxiety and shock that the person must face and manage (Stephan et al., 1999). The theory of anxiety/ uncertainty management, developed by (Gudykunst, 1993, 1995, 1998) assumes influences on intercultural competences (Gudykunst & Nishida, 1999; Hubbert et al., 1999).

There are numerous initiatives to promote intercultural organizations best practices that are dealing with different aspects of the business environment. Business organizations have a very important role in promoting an intercultural organizational environment to emerge from the operating levels of the organizational pyramid base and connect to the management level for achieving the objectives. Intercultural organizational exchange can be promoted by business organizations in broader communities through investments in social programs, philanthropic support, etc. The management of the intercultural organization has to use available resources to develop the capacities to promote behaviours, attitudes, skills and abilities to facilitate the interrelations between individuals beyond their personal differences of gender, race, religion, lifestyles and social attitudes (Dubrin, 2003). These social programs are aimed at the intercultural organization through managing the impact of their business sensitivity to local cultures and defend their strategic and political decisions that encourage social relationships in the intercultural organization.

The management of intercultural organization can be oriented instrumentally to create a competitive advantage, but its scope would be very limited because of its pragmatism. Managing intercultural diversity in organizations can benefit by offering advantages in marketing, cost reduction by reducing

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staff turnover and absenteeism and increased job satisfaction. Thus, in this way it has achieved greater cultural diversity with the participation of workers from minority groups (Cox & Blake 1991; Orlando, 2000). As an example, the case of coworkers who are subject to a climate of competitiveness and tension that hinders their relationship despite many years working together and claiming the value of an intercultural relationship understood as satisfactory, fair and symmetrical (Amir, 1976; Pettigrew, 1986; Tzeng & Jackson, 1994).

Therefore, intercultural management organizational moves away from standardization processes of organizational behaviour to develop the knowledge of individuals to be full integration with the rationale of the organization. It is in the connection between the different levels of the organizational structure that processes intercultural organizations have an important role because they eliminate discrimination and stereotypes, demystify privileges through intercultural dialogue processes to build confidence and a sense of common purpose

STRATEGIC MANAGEMENT OF INTERCULTURAL ORGANIZATION

Few business organizations take the intercultural organization approach as a strategic vision of sustainability and philanthropy to support the development of their communities by addressing their critical needs, make social investments that encourage sustainability, working in partnership with government and civil society. Organizations, especially business firms that have greater clarity in their view, have an interest in supporting the efforts of communities to promote the principles of intercultural, cooperative relations, sustainability, tolerance, etc.

It is in this sense that the promotion of the principles and values of intercultural organizations are seen as part of the organizational approach to sustainability. This is reflected in its programs to promote intercultural understanding through sustainable business practices such as human rights, rights in the workplace, business peace, diversity, etc. Such concrete actions are not limited only to the workplace; companies are known to have initiated innovative ideas to promote intercultural understanding even in the marketplaces, the communities and in the society at large. A stable non-polarized economic environment is beneficial to all the stakeholders and intercultural organizations foster the development of such an environment.

The intercultural organization is the source of all creativity and innovation. Among the findings of research conducted in the intercultural organization, it has been found that the most creative and innovative organizations have diversified groups and teams and greater results in reducing racism, classism and sexism (Kanter, 1983). The intercultural organization is created and sustained through knowledge management and experience of unity and oneness of humanity, recognizing its cultural diversity based on respect. These capabilities of mental consciousness experiences and standards for cross-cultural interactions include planning processes, monitoring and review of mental models.

Under this assumption, the intercultural organization is an organizational philosophy that influences the contacts and interactions of individuals in organizations, societies and cultures. In intercultural organizations, diversity and plurality of individuals and groups contribute to complying with the organizational mission under the support of an organizational philosophy. The organizational values of equal opportunities, open communication, gender equality, fraternity group, labour justice, etc., have their sustenance not only in organizational philosophy but in the individual conviction that engenders

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an atmosphere of diverse intercultural acceptance. An organizational environment where these values are always present reduces polarization and cross-cultural tensions among the employees.

Inclusive policies and citizen participation guarantee social cohesion of civil society. The intercultural organization empowers various actors and stakeholders' ensuring their involvement in the organization with behaviours and attitudes that create an organizational climate and a favourable working environment for carrying out the processes of strategic management, production, distribution and consumption of goods and services. In addition, intercultural organization ensures integration of organizational structures so that all members have the same opportunities of access to the benefits offered by various positions without any benefits accorded on the grounds of religion, ethnicity, race, gender, etc. (Foster et al., 1991).

The intercultural organization face challenges in formulation and implementation of policies. Infact at the core of strategic management in intercultural organizations lays managing cultural difference. This is so because this involves the integration of diverse individuals in organizations who have their own paradigms rooted in values, norms, beliefs, attitudes, emotions, feelings, etc., which are vastly different from others. This diversity of deeply held individual paradigms, in turn, makes the organizational integration processes difficult as here what matter is a collective contribution.

The intercultural organizational environments affect strategic management due to the differences induced by different cultures. Conflicts caused by the dysfunctional management of diversity and intercultural organization generate high levels of stress that lead to attitudes of intolerance, aggression and lack of acceptance of others in the organization. In the strategic management processes of goal setting, strategy formulation and implementation, intra and inter intercultural conflicts arising from cultural differences and diversity are common. They constantly threaten the ability of both local and global organizations (Bendick & Egan 2008). Organizational diversity and intercultural understanding have an impact on the management of intra- and inter-organizational conflicts (Pelled et al., 1999). Innovative business practices promote intercultural relations of cooperation in conflict or post-conflict situations. Risky investments in conflict situations can provide an interface for contacts and interactions between the communities involved, resulting in shifting the focus away from the conflict to business activities aimed at profits.

ORGANIZATIONAL LEARNING AND INTERCULTURAL TRAINING

Intercultural organizations systems have characteristics that are learned transmitted and facilitated through the development of social skills that focus their action on communication patterns to members of different cultures. The most advanced stage of intercultural organization communication is developing the inter-linkages and establishing permanent ties to build a solid organizational reputation. The new media and intercultural organizational communication processes are essential in identifying the collective identities for both the institutional and organizational changes.

The phenomenon of intercultural organizational communication is complex because it involves many individuals who have heterogeneous cultural backgrounds. Every language and culture has distinctively different symbols related to different emotions and feelings. In intercultural communication, language and symbols and representations as not discursive and they are affected if they do not have common codes for representing thought forms, emotions, feelings, ideas, values, etc., and which are common to a community, village or nation.

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There is an increasing need for organizations to manage processes to ensure intercultural learning to value differences in a diverse but globally connected world and additionally form the inclusive mindsets and attitudes among investors, suppliers, employees, customers, prospects, levels of government and other stakeholders in local communities in general. For contacts and interrelationships between cultures to be more effective, recognition of cultural differences is important, under the conditions of having an intercultural mentality, intercultural sensitivity and intercultural skills (Hammer et al., 2003; Bennett, 2001a, 2001b, 2001c; Bennett, 1993).

The discussion on intercultural competition has been around for some time now. In recent years the field of organizational multiculturalism has seen the development and use of the theoretical framework and some methods of intercultural competence that aims to help global leaders learn to learn in intercultural or multicultural situations. It is in the cultural interfaces where intercultural organizational processes are developed and results in the generation of intercultural skills such as mediation, empathic abilities etc.

The intercultural organization is geared more to the creative development of competencies rather than to consider the limitations of traditional academic programs. The intercultural organizational mentality has to be established before the skills and competencies are acquired by individuals. In intercultural organizations, intercultural competence is a valuable skill. This is an outcome of integrating exercise, which according to Aneas (2009) emerges when symmetry conditions are presented in intercultural relations through the psychological, social and cultural integration of all members working in the legal, fair, equitable and cooperative environment for achieving common goals.

The intercultural organization encourages administrators in the development of their intercultural mentality and skills to adapt to situations that require intercultural competence. The leader with intercultural organizational mentality recognizes global corporations that gave origin and administer third cultures that went on to become dominant cultures in the working lives of those organizations (Bennett, 2001a).The intercultural competence is developed in the intercultural organization by integrating cognitive, emotional, attitudinal and behavioural components of all members of the organization and the design of structures, processes and technologies, culture and organizational strategies that interact with the environment. This ensures fulfilment of their duties through intercultural relationships despite an increasingly complex and uncertain environment.

The development of intercultural competencies is essential for the development of intercultural dialogue in organizations. These skills are defined as the complex skills necessary for effective and appropriate performance when interacting with those who are linguistically and culturally different (Fantini, 2007). These skills are added to the curriculum of learning organizations to learn continuously in global environments to think globally and act locally. For example, racial and cultural imbalances of power are treated in such a way that people learn from each other and change. Organizations promoting intercultural structures focus on building deep contacts and relationships between people and interactions for mutual benefit, respect and learning from each other. Managers of organizations recognize the importance of education programs supported by governments and academics for organizational learning and intercultural training. The international BMW Group award for example, given annually rewards contributions in intercultural learning. The prize winners are recognized and rewarded for conceiving and implementing new ideas and projects that are exemplary and deal with issues revolving around learning form diversity.

The importance of intercultural organizational learning cannot be emphasized enough. Learning about other's cultural values, norms, beliefs, learning styles etc. helps employees in such organizations to acquire new skills and knowledge that facilitates shared understanding and knowledge transfer. This

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will benefit both the individual and the organization by fostering commitment from a diverse group of individuals.

The intercultural organization is an ethical imperative for respect, dignity and tolerance for cultural diversity. The formation and maintenance of organizational values are central to the philosophy of the organization, which serves as a guide to ethical behaviour and pluralistic conduct, which in turn influences the formulation and implementation of strategies and policies that govern action. Experience and positive attitudes of people who exercise an intercultural ethics contribute to the development of intercultural mediator activities in organizations. As a strategy, the intercultural organization requires committed leadership with the formation of behaviours and structures centred on the assessment of organizational culture focused on prioritizing the plurality resulting from diversity. The organizations involved in the exchange of training programs to create organizational intercultural knowledge, build the necessary structures and develop the competencies and skills.

Intercultural organizations consciously develop expatriation policies for executives and employees involving a stay of long duration so that a global perspective is developed. Employees, who are expatriates working in international projects in a subsidiary of the same corporation in a host country with a different culture and diversity, need to adapt to the new culture through support programs of training, including intercultural organizational diversity management and provide them with the plurality of actions in structured experiences (Rubio, 1999).

OPERATIONALIZATION AND IMPLEMENTATION OF ORGANIZATIONAL PROGRAMS TO FACILITATE MULTICULTURALISM

The diversity in the intercultural organization can emerge into a competitive advantage for organizations (Dubrin, 2003) with the implementation of strategies and organizational structures that facilitate behavioural processes, communication and attitudinal change among members. The implementation of programs to promote multiculturalism through dialogue, practical and culturally sensitive activities etc., contributes to improved relations with all internal and external groups of the company stakeholders in the local community.

Due to the scale and scope of operations in intercultural organizations, such programs encounter geographical and cultural differences and challenges. HSBC, for example, promotes exchange programs in the context of an intercultural organization where the core of the brand is the cultural heritage. This is essential in innovative marketing initiatives aimed at different customers, and culturally sensitive to the principles of sustainability with various suppliers' promotional programs. Business organizations can play an important role in the promotion of intercultural organizational values in the area such as corporate social responsibility and organizational sustainability by including intercultural issues such as human rights, labour rights, ethical principles in business, responsible marketing approaches, support for community projects and tolerance in society. Tourism activities contribute to local economic growth and cooperation between countries, facilitating organizational intercultural cooperation for developing joint projects and joint marketing activities.

Representatives of international business organizations such as the Alliance of Civilizations of the United Nations and the Global Compact of the United Nations recommends the development of intercultural organizations to expand collaboration between business, governments and civil society due to their common shared interest of global sustainability. These United Nations programs were inspired by

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the interests exhibited by the business communities' and the support they extended to the creation of groups comprising of people from civil society, businesses and government and providing them with a platform for discussion of common cultural concerns and challenges& knowledge sharing.

The implementation of strategies for the development of intercultural competencies of individuals in organizations is based on the intercultural sensitivity to particular issues that need to be resolved. To achieve intercultural sensitivity in organizations, people require intercultural skills training to recognize and experience cultural differences so that they can adapt well to their organizations. As intercultural sensitivity increases i.e., perceptual organization of cultural differences heightens, the sophistication in the experience of culture increases. Once that is achieved and such sensitivity in intercultural organizations helps acquire the competence to differentiate cultures against generalizations, so that an open and learning approach to cultural differences is maintained. People who achieve the level of sensitivity in the intercultural organization are able to adapt to another culture without degrading either their own culture or the other culture.

INTERCULTURAL ORGANIZATION AND DYSFUNCTIONAL GOVERNANCE

Organizations that are diversified across cultures tend to facilitate the development of the potential of the individuals involved in the various activities and functions. The cultural, social, ethnic, gender, religion, etc., differences represent serious obstacles that can lead to conflicts and intra organizational dysfunctions. In part, this dysfunctional organizational diversity and intercultural organization are due to the lack of a management system that relies on policies and strategies that support governance processes focusing on intercultural organization and organizational diversity.

The interactions and relationships between individuals within organizations are complicated by the complexities of communications arising from the diversity of languages, technicalities, verbal language, idiosyncrasies, etc. These lead to misinterpretation, distortion of meanings, misunderstandings, etc. The oil company Shell has established a set of principles relating to cultural practices through diversity, leaving out those local considerations that are considered dysfunctional as corruption (Shell, 2015).

It is questioned whether the intercultural organization can harmonize the principles of cultural diversity with universal ethical principles thus going beyond the ethnocentric approach. The firm Deloitte emphasizes its shared corporate values underlying the harmonization of both approaches i.e., ethnocentrism and multiculturalism for cultural diversity (Deloitte, 2011; Sandford & Mohlemkamp, 2015).

Some of the barriers to achieving intercultural diversity in organizations (Triandis, 1994) are prejudice, errors in individuals own assessments, in addition to the intercultural approach such as ethnocentrism, which is the consideration that the own culture is the best in the world. Other barriers are created by disorientation, anxiety and tension during interaction in intercultural organizations (Ramirez & León, 2008). Contacts and intercultural encounters between individuals in organizations always involve cultural tensions depending on the value system and the context in which such organizational intercultural interactions occur.

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AUDITS OF ORGANIZATIONAL DIVERSITY

Identifying correctly the causes of dysfunction is the key to success in intercultural organizations. There are a number of methods and tools to perform these organizational diagnoses among which audits of organizational diversity that determines the main causes of the low presence of intercultural sensitivity is perhaps the most significant. Appropriate techniques of organizational development are then used to intervene to improve the situations.

The identification of best practices through such diversity audits will help to foster understanding and intercultural dialogue needed to share the progress with a wide range of organizations. The positive assessment of intercultural relations benefits and maintains the permanence of diversity and intercultural contacts. Responsiveness, compliance and value of the results (Aneas, 2015) are components that promote a climate of contacts and growth of intercultural relationships in organizations.

INTERCULTURAL MANAGEMENT OF ORGANIZATIONS

The intercultural organization can be a company in an environment where the members belong to different cultures. The intercultural organization has processes and dynamics of a psychosocial nature that are generated by the interactions between people of different cultures within an organization, which can be a company. These interactions serve as the basis to conceptualize the answers in terms of intercultural competences among the members of the organization or company. In a company, the group as an object of attention to intercultural relations is relevant, as well as inter-group intercultural relations (Berry et al., 1986; Kim, 1988a, 1988b, 1989). The contact hypothesis establishes that it is the nature of contact that generates favourable attitudes in inter-group relations between groups in intergroup behaviours (Allport, 1955; Pettgrew, 1971).

A member with a positive expectation of intergroup intercultural management relationship in the company and who makes a hypothesis about the outcome of their intercultural relationships has higher expectations of self-efficacy (Blake & Mounton, 1986; Rabbie & Horwith, 1969; Sherif, 1979; Bobo, 1983).

Intercultural integration to a company, for example, is subject to levels of individual social determinants such as cultural and racial origin (Kim, 1988a, 1988b), intercultural sensitivity (Bhawuk & Brislin, 1992; Bennet, 1993), personality attributes (Kealy & Ruben, 1983; Caligiuri et al., 2000; Fiske & Maddi, 1961; Bradburn, 1969; Quisumbing, 1982; Yum, 1987; Kim, 1988a), open-mindedness (Jantsch, 1980; Furnham, 1984; Baldassini & Flaherty, 1982; Cort & King, 1979), and Flexibility (Lazarus, 1966).

Intercultural adaptation refers to the harmonious integration of cognitive, affective and behavioural components, both with their own and the new environment.

The stress generated by intercultural shock frequently manifests itself aggressively.

Interculturality in a company promotes intercultural relations among all groups and members and intercultural competencies are exercised (Bartolomé et al., 1997; Banks, 1997).

The constitutive element of organizational interculturality is the culture of the people that are part of the organization, as well as the influences of social elements, the dynamics and psychosocial processes determined by the environment, people and groups.

Intercultural relations also generate dynamics of a psychological nature.

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The intercultural company is integrated by the intercultural interactions of its members in an economic, social, cultural, legal, institutional and labour context.

CHALLENGES FACED BY INTERCULTURAL ORGANIZATIONS

The intercultural organization face several challenges as they tend to employ people from different cultural backgrounds, belief systems, values, languages, customs, etc. Both cultural universalism and relativism point to the fact that diversity in the cultural background of the people is the cause of continuous clashes and conflicts (Donaldson, 1996). Among the challenges facing today's organizations is the need to promote an intercultural organizational platform that supports diverse subcultures of members and encourage processes of cohesion and group integration resulting in the development of opportunities and meeting the needs of those involved.

The intercultural organization is challenged by the emergence of intercultural conflicts arising from the absence of human rights practices in interactions between different actors and stakeholders both within and outside organizations. This lack of exercise of human rights is manifested in actions of unequal access to resources, employment opportunities, promotions, incentives, etc., and expressions of attitudes of intolerance based on ethnic origin, gender, religion, age, functional ability, etc.

Social, economic and environmental sustainability is the biggest challenge organizations face as the vision of sustainable development is relevant to any form of organization. To meet these challenges, business organizations develop concrete and innovative responses that include intercultural organizational orientation to promote intercultural cooperation relations in the business environment. Organizations take the discipline of the intercultural organization as a management perspective of diversity, to respond to challenges and opportunities, business needs evolve resulting in the development of new practices and principles.

Diversity policies in intercultural organizations do not give the required output as the focus is on ensuring that the minorities integrate into the dominant culture (Thomas & Gabarro, 1999). Thus, assimilation leaves a section of the people unhappy and dissatisfied as differences are not understood and celebrated. Pless and Maak (2004) recommend that organizations should embrace diversity, recognize, encourage and value differences. A culture of inclusion where diversity is valued will only unleash the potential of workforce diversity. The additional benefits of intercultural organizations include retention of talent, the cultural inclusion of minority groups and improving quality of life (das Neves & Scrum, 2013).

PROPOSALS

Finally, some concrete proposals for implementing the strategy of intercultural management in organizations are suggested. They revolve around the creation of the right environment; focus on the accomplishment of the task at hand by the development of the required skills, behaviours, values and beliefs amongst the diverse workforce through effective intercultural communication being led from the front by a skilled global leader.

1. Organizations must create a climate of respect for diversity and cultural inclusion that generates appropriate conditions to attract and retain organizational intercultural capital.

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2. The management of the intercultural organization should have a more strategic orientation to achieve competitive advantage rather than being an end in itself.
3. The management of the intercultural organization should use available resources to develop the capacities to promote behaviours, attitudes, skills and abilities to facilitate relationships between individuals.
4. Organizations should develop programs that promote intercultural organizational integration that celebrates diversity and creates an intention to learn and according to Triandis (2003), this intention is influenced by variables of attitudes, norms and social, cultural and demographic factors. Organizations that compete in global environments need to invest in the development of intercultural competence programs for their staff.
5. These training programs should create intercultural organization and develop values, attitudes and skills in communication processes, motivate and foster intercultural leadership that discourages violence and employment discrimination.
6. The leader of the global corporation should develop intercultural organizational skills to achieve better results with teams that are multicultural in nature unlike the monoculture-based teams in the past.
7. Organizational leadership should promote codes of intercultural communication and intercultural sensitivity to develop the values of a new, more universal and objective organizational culture, free of subjectivity and discrimination, one that is able to strengthen the inter-open spaces for communication free of conflicts and cooperation between different people.
8. Therefore, authentic intercultural organizational processes must be based on humanistic and critical direction; policies and strategies focused on organizational core values of intercultural understanding and acceptance that promote the creation of an environment that encourages the development of all members of the interculturally diverse organization.

CONCLUSION

In conclusion, intercultural organizations are a reality that is emerging rapidly due to globalization and resultant cultural diversity. Given the challenges associated with the intercultural organization, development of intercultural sensitivity, intercultural capital and intercultural competence through training and development, integration of the diverse teams will ensure that the organization remains strategically competitive. Exploring the concept of intercultural organization brings out to the fore the need to strategically manage the various processes amongst the culturally diverse teams to ensure organizational success.

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KEY TERMS AND DEFINITIONS

Cultural Capital: Is the stock of values upon which the structure of each society is characterized it as different from others.

Cultural Diversity: Refers to the inclusion of cultural differences among diverse people because of the existence of a variety of cultural and ethnic groups, language, dress, and traditions within a society or an organization.

Intercultural Management: Is an interdisciplinary human resources field concerned with facilitating management in organizational communities where is a deep understanding and respect of all cultures

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focusing on effective interactions, development of deep relationships and mutual exchange of cultural norms and ideas between personnel, customers and all the stakeholders across organizational borders.

Intercultural Organization: Is the set of contacts and interactions that often occur among the various members of an organization having different backgrounds and cultural identities, in terms of a common understanding of the meanings of language, values, attitudes, thoughts, emotions, actions, etc., defining the ways of being, thinking and acting, and understanding of different lifestyles.

Multiculturalism: Is a dynamic and dialectical process that recognizes the existence and convergence of various cultures as a space between the local and global processes intersecting social and cultural networks articulating personal and collective identities.

Multidimensional Construct Metacognitive: Is the ability of consciousness and alertness that individuals have for intercultural interactions through mental, motivational, and behavioral components.

Subjective Culture: Is a pattern of beliefs, behaviors, and values that are maintained by groups of people interacting.

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Chapter 82
Launching Diversity-Intelligent Strategies in Organizations:
A Leadership Development Perspective

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ABSTRACT

The purpose of this chapter is to provide diversity intelligent strategies that can be used by leaders to eliminate ineffective diversity efforts, enhance effective diversity efforts, and provide new diversity intelligent strategies in organizations. Integrating DQ alongside emotional, cultural, and intellectual intelligences in the workplace can strengthen the effectiveness of leaders' people management efforts. Most employees enter organizations with the expectation of having positive experiences with their leaders and achieving success towards their career goals. Yet, many are marginalized or limited in their opportunities for advancement for reasons of which they have no control. The eradication of ineffective training and development of diversity must occur for effective change to occur. Credible DQ, ethical and legal issues, and workforce inter-personnel diversity training programs must be launched by HRD professionals and organization leaders so that leaders are developed to provide employees with fair and just treatment and successful career development will ensue.

INTRODUCTION

After the election of the 44th President of the United States of America in 2008, the Honorable Barack Hussein Obama, an American Black man, some individuals in America began to speak of a post-racial America. However, since the 2016 election, many Americans are speaking of the regression of diversity achievements throughout the country. They have begun to accept that it was indeed premature to think that one election could change the hearts of individuals who refuse to accept and embrace diversity changes. The world continues to witness resistance, acceptance, and infinite ways in which non-diverse and diverse individuals in America experience diversity.

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There is no definitive definition of diversity within society; however, the United States' federal government has provided a definitive definition for organizations. The federal government's definition originated from the 1964 Civil Rights Act legislation, but has evolved through Presidential, Executive Orders to provide protection for individuals who are discriminated against within the workplace. The following list contains the classification by which groups of employees are currently protected within organizations that have federal contracts and are enforced by the Equal Employment Opportunities Commission (EEOC):

1. Age - Age Discrimination in Employment Act of 1967;
2. Disability - Vocational Rehabilitation and Other Rehabilitation Services of 1973 and Americans with Disabilities Act of 1990;
3. National Origin - Civil Rights Act of 1964;
4. Race/Color - Civil Rights Act of 1964;
5. Religion - Civil Rights Act of 1964;
6. Sex - Equal Pay Act of 1963 and Civil Rights Act of 1964; and
7. Sexual orientation – Executive Order 11478. (2014, ¶ 1)

Having federal contracts requires organizations to adhere to federal laws and allows employees to be protected by the EEOC. They are protected from discrimination based on equal pay/compensation (Equal Pay Act of 1963); harassment (Title VII of the Civil Rights Act of 1964, the Age Discrimination in Employment Act of 1967, (ADEA); and the Americans with Disabilities Act of 1990, (ADA)); pregnancy (Pregnancy Discrimination Act); retaliation; sexual harassment; genetic information (Genetic Information Nondiscrimination Act of 2008); and veteran status (Vietnam Era Veterans' Readjustment Assistance Act of 1974, and Uniformed Services Employment and Reemployment Rights Act).

This chapter reveals that, across a spectrum of situations and issues, there is a need to clearly delineate the difference between legal, mandated diversity, and diversity of thought. Organization leaders have permitted and perpetuated the mudding of the waters by allowing the word to, in essence, simply represent difference. This choice has benefitted neither the organization nor the individual. It has resulted in over $8-10 billion spent on ineffective diversity training without evidential, positive change as reflected in the continuous claims, lawsuits, and settlements made through the Equal Employment Opportunities Commission (EEOC) and the United States Department of Labor as a result of discriminatory workplace practices. U.S. EEOC Chair Berrien noted that the EEOC had filed 21 systemic lawsuits in Fiscal Year 2013 securing "a record $372.1 million in monetary relief for victims of employment discrimination in private sector and state and local government workplaces" (Performance and Accountability Report, 2013, vi).

Diversity Intelligence (DQ)

Hughes (2015b) began introducing diversity intelligence (DQ) as the knowledge to understand protected class employees, the legal mandates, and executive orders that were established for their protection. She suggested that DQ is established when leaders obtain an understanding of the history and reasoning for the existence of the Civil Rights Act of 1964, the EEOC, and other adaptations to protect diverse individuals from discriminatory practices in the workplace. She further suggested the questions and comments in Table 1 for employees and organization leaders to begin to take an active role in integrating

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diversity into their organizations. When employees and organization leaders embrace their role in the change process that is needed to integrate diversity into the organization, there is a better chance that the change effort will be successful.

Table 1. Personal management of self and organization management perspectives of intelligences

	Emotional Intelligence (EI)	**Cultural Intelligence (CI)**	**Intellectual Intelligence (II)**	**Diversity Intelligence (DQ)**
Personal Management of Self	How do you emotionally and mentally balance who you are to yourself and the organization?	How does your behavior reflect your cultural acceptance and understanding of others?	How do you balance your intellect to embrace not only your knowledge but the knowledge of your peers?	In what way does your understanding of other individuals and cultures reflect your perception of others who are different than you?
Organization Management	Organizations must be cognizant of the emotional intelligence of employees and must make it a part of an evaluation system to determine employee performance level.	Organizations must reflect an attitude of embracement and acceptance of different cultures and recognize inter-personnel diversity within cultures.	Organizations must value the intellect of employees but not to the detriment of inappropriate behavior towards those who are different.	Organizations must not only embrace diversity of appearance but also diversity of thought and action.

Hughes and Brown (2018) defined diversity intelligence (DQ) as "the capability of individuals to recognize the value of workplace diversity and to use this information to guide thinking and behavior" (p. 264). DQ allows human resource development (HRD) professionals to understand protected class groups of employees and categories of protection against discrimination in the workplace. Hughes and Brown (2018) explained that DQ gives HRD professionals the knowledge needed to help leaders further understand protected class employees and leverage their understanding to develop diversity intelligent strategies to help leaders help protected class employees integrate seamlessly into the workplace.

The purpose of this chapter is to provide diversity intelligent strategies that can be used by leaders to eliminate ineffective diversity efforts and enhance effective diversity efforts with a better understanding of all of their employees. Integrating DQ alongside emotional, cultural, and intellectual intelligences in the workplace can strengthen the effectiveness of leaders' people management efforts. Most employees enter organizations with the expectation of having positive experiences with their leaders and achieving success towards their career goals. Yet, many are marginalized or limited in their opportunities for advancement for reasons of which they have no control. The objectives of this chapter are:

1. Provide specific diversity intelligent strategies for HRD professionals and leaders to enhance diversity efforts; and
2. Provide specific career development evaluation systems strategies for leaders to help employees develop and attain career goals.

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Background

Hughes (2015b) suggested that there were many issues, controversies, and problems that needed to be addressed to successfully integrate diversity into organizations. One suggestion was that leaders needed to acknowledge the paradigm shifts that have already occurred with regard to diversity and career development. Table 2 (reprinted with permission from the *Academy of Business Research Journal*, Hughes, 2015a) provided past and present paradigm shifts and metaphors for change along with implications for future changes within organizations. The implications and recommendations for organization leaders to address diversity were:

1. Formalizing the process to institutionalize diversity and increase the population of diverse leaders within the organization.
2. Recognizing that employees are seeking authentic diversity leadership and no longer want figure heads that represent a minority group who has no power within their positions to affect change.
3. Assimilation to norms is less relevant and employees want their differences to be valued within the organization as evidenced through career advancement opportunities
4. Diversity must be prioritized because it is a strategic priority of the organization and not just because it is legally mandated.

The implications and recommendations for leaders to address career development were:

1. Careers have varying directions and organizations need a career development evaluation process for employees to remain with the organization.
2. Traditional career models are no longer viable and organizations need to develop career management systems to manage the career development process of their employees.
3. Employees are managing their own careers and are willing to change jobs to achieve their career goals. Organizations need to acknowledge that employees have career goals and work with them to reach their career if it is possible within the current organization.
4. Employees want jobs that focus on results and impact towards their career goals. They want positions that have location value that adds to their career development plan and are timely.
5. Employees are now able to assess all factors related to their careers as opposed to having a single option. Organizations need to communicate with employees through their career development evaluation process to learn from the employees.

The implications and recommendations for leaders to value diversity for career development were:

1. The global economy has forced growth and high demand for diversity. The business needs are superseding traditional career plans and policies.
2. Diversity laws are designed to protect the organization and the employee. Understanding the laws reduces suppressive employee behaviors. This can be accomplished if all employees are trained before beginning their job and are provided annual reviews of the laws so that it becomes embedded within the culture of the organization.
3. The culture of the organization must be accepting and open to providing career support for diverse employees.

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4. There must be a change from a focus on singular, exclusive development of a few diverse positions to a cross-functional development of expertise through the four intelligences: emotional, cultural, intellectual, and diversity.
5. Organization leaders must perpetuate an understanding of legal implications of not complying with diversity requirements. Business and moral imperative to understand diversity laws for organization career development.

Table 2. Diversity and career development paradigm shifts and metaphors for change

Past	Present	Implications
Diversity Paradigms		
Serendipitous (Betsworth, D. G. & Hansen, J. I. C., 1996)	Intentional (Young, R. A. & Valach, L.,2004)	Formalize the process to institutionalize diversity and increase the population of diverse leaders.
Superficial (Gilbert & Ivancevich, 2000; Mills, 2008)	Authentic (enlightenment) (Craddock, 2009; Jones, Anand, & Alvarez, 2005; Svejenova, 2005).	Employees seeking authentic diversity leadership.
Fitting In (blending) (Cox, Lobel, & McLeod, 1991)	Adding value through difference (helping others); Focus on results and impact (Barak, Cherin, & Berkman, 1998; Milliken & Martins, 1996)	Assimilation to norms is less relevant. Differences are valued (Purdie-Vaughns, Steele, Davies, Ditlmann, & Crosby, 2008).
System bias (unjust systems) (Gilliland, 1993; Taylor, Masterson, Renard, & Tracy, 1998)	Individual recognition (just systems) Buckley, Beu, Frink, Howard, Berkson, Mobbs, & Ferris, 2001)	Institutional and implicit bias must be eliminated (Jost & Andrews, 2011).
Prioritize through mandates (Dass & Parker, 1999; Riccucci, 1997)	Strategic priority (Richard, 2000)	Diversity was prioritized because of legal mandates as opposed to a strategic priority of the organization. (Guthridge, Komm, & Lawson, 2008; Jayne & Dipboye, 2004)
Career Development Metaphors and Paradigms		
Ladders (Complete dedication) (Baron, Dobbin, & Jennings, 1986)	Jungle gym (Flexibility and necessary sacrifice) (Gunz, 1989; Parker & Inkson,1999; Sandberg, 2013)	Careers are no longer straight up; varying directions. All in at all cost no longer viable. (Hayes, 2000; Kaye, 1997)
Career Models (Buzzanell & Goldzwig, 1991)	Career Management Systems (CMS) (Baruch & Peiperl, 2000; Dreher & Dougherty, 1997)	Evolving away from traditional career models to CMSs. (Baruch, 2004)
Organization or"Company" Man (Gouldner, 1957; Jacoby, 1999)	Free Agent (Nicholson, 1996; Pazy, 1988).	Employees are managing their own careers and are willing to change jobs. (Rousseau, 2004; Sturges, Guest, Conway, & Davey, 2002)
Manage organization & business needs (Hammer & Stanton, 1999)	Manage a career (Sullivan, Martin, Carden, & Mainiero, 2003; Raabe, Frese, & Beehr, 2007)	Integration of personal skills with business needs is essential. (Bridgstock, 2009; De Vos & Soens, 2008)
Face time (hours) (Veiga, 1983)	Quality results (MacDermid, Lee, Buck, & Williams, 2001).	Quality results using time wisely as opposed to being seen. Location value is critical. Focus on results and impact. (Cabrera, 2007; Hughes, 2012; O'Neil, Hopkins, & Bilimoria, 2008; Reitman & Schneer, 2003)
Single career option (Walker, 1976; Hall & Richter, 1990)	Deciding career choice factors (Lent, Brown, & Hackett, 1994; Hall & Mirvis, 1995).	Employees are now able to assess all factors related to their careers as opposed to having a single option. (Baruch, 2006; Helfat, Harris, & Wolfson, 2006; Sullivan & Baruch, 2009)

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Table 2. Continued

Past	Present	Implications
Valuing Diversity for Career Development Paradigm Shifts		
Status quo (Geletkanycz & Black, 2001; Brayboy, 2003)	Potential for growth or high demand (Florida & Gates, 2001; Grimes, 2002)	Global economy has forced growth and high demand for diversity. The business needs are superseding traditional career plans and policies. (Herring, 2009)
Anti-discrimination laws perceived to suppress (Dicker, 1998)	Laws that protect (Vega & Comer, 2005)	Laws that protect the organization and the employee. Understanding the laws reduces suppressive employee behaviors. (Dipboye & Colella, 2005; Fuller, Edelman, & Matusik, 2000)
Culture exclusive of diversity (Parkhe, 1991; Thomas, 1990)	Culture inclusive of diversity (Barak, 2000)	Culture that is accepting and open to providing career support for diverse employees. (Nishii & Mayer, 2009; Pless & Maak, 2004; Stevens, Plaut, & Sanchez-Burks, 2008)
Singular expertise (Brousseau, Driver, Eneroth, & Larson, 1996)	Cross-functional development (Brousseau, Driver, Eneroth, & Larson, 1996)	Change from a focus on singular, exclusive development of a few diverse positions versus a cross-functional development of expertise (Arthur, 2008; Lamb & Sutherland, 2010).
Personal opinion application of diversity laws	True understanding of diversity laws	Understanding of legal implications of not complying with diversity requirements. Business and moral imperative to understand diversity laws for organization career development. (Barak, 2013; Bryd & Scott, 2014)

Table 2 remains very relevant to assist HRD professionals and organization leaders as they seek to integrate diversity within their organizations. The role of organization context is critical to integrating diversity into organizations to benefit the career development of all employees. Organizations have cultural characteristics that must be shifted towards valuing diversity (Hughes, 2019). The shift can only occur organizations begin:

1. Internalizing a leadership identity that supports true diversity (Hughes, 2015a; 2015b).
2. Institutionalizing a population of diverse leaders (Nishii & Mayer, 2009).
3. Relying more on the individual rather than on the group identity. "The more you know about an individual, the less it makes sense to rely on general findings about a group of which he or she is a part" (Benko & Pelster, 2013, p. 81).

Hughes (2015a; 2015b) derived and suggested six factors and implications, shown in Table 3, which can be used to develop a tool to evaluate and manage evaluators of diversity efforts. Upon sharing these factors with her colleague, her colleague suggested that this is now "Diversity 2.0 and diversity is participatory". (J. Tavano, personal communication, April, 30, 2014)

These factors remain relevant to the success of diversity integration into organizations. The factors must be implemented through the actions of diversity intelligent organization leaders. Many leaders do not know who the protected class employees are within their organizations and some of them do not even recognize that they, themselves, are within a protected class(es) (Hughes, 2018; Hughes & Brown, 2018).

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Table 3. Six Factors influential to organization leaders improving diversity efforts

Factor	Organization Leader
1. Communication of Policy and Standards of Peformance (Murphy & Cleveland, 1991)	Diversity leadership can benefit from better communication of policy standards throughout the organization. Execution of diversity policy must be consistent.
2. Understanding of Policy (Cleveland & Murphy, 1992)	It is difficult to understand a policy when there is no definition and disagreement regarding the terms being used. Legal versus ethical issue of diversity must be delineated.
3. Frame of Reference Training (Bernardin & Buckley, 1981; Day & Suksky, 1995)	Leaders can be trained to use the five values as a common FOR to recognize objective differences amongst employees.
4. Time (Bernardin & Villanova, 1986; Cleveland & Murphy, 1992; Murphy, 2008; Tziner, Murphy & Cleveland, 1991; Viswesvaran, 2001)	Leaders must conscientiously invest the time to understand differences and this time must be valued by the organization.
5. Motivation and Rewards (Cleveland & Murphy, 1992; Harris, 1994; Porter & Lawler, 1968; Vroom, 1964, 1995)	Understanding what motivates organization leaders and rewarding them appropriately may improve diversity efforts.
6. Accountability (Harris, 1994; Jayne & Dipboye, 2004; Mero & Motowidlo, 1995; Murphy 2008; Schreiber, Price & Morrison, 1992)	Accountability reduces EEOC complaints, labor disputes, and lawsuits associated with diversity and unfairness.

Hughes and Stephens (2012) suggested that diversity could be leveraged within organizations through a career development paradigm shift. They offered that career development was essential to talent management based on location value (Hughes, 2010) of the employee. If employees' thoughts are consumed by discriminatory treatment because they are emotionally affected by discriminatory practices within a discriminatory organization culture, the organization will not achieve its goals through all of its employees. The culture of the organization in which diversity is not defined and clarified can negatively impact organizational strategy and competitiveness (Carrell, Mann, & Honeycutt-Sigler, 2006). Hughes and Stephens also suggested that further research was needed on the extent to which organizational leaders can leverage their understanding of diversity to enhance the career development of all employees.

Diversity leaders must be committed to helping employees succeed. Hughes (2012) suggested that the needs of all employees be acknowledged, regardless of differences, through the recognition of inter-personnel diversity. Inter-personnel diversity represents the recognition of each employee's uniqueness (Hughes, 2018c) since not all individuals in a race are the same; therefore, the typical stereotypes associated with the group from which they originate should not automatically be attributed to them.

From a DQ perspective, the location value (Hughes, 2010) of the employee must be considered by examining the context within which the employee is asked to work. The physical placement of the employees, both with regards to the leader whom employees report to and the actual place itself, directly affects their career progression within the organization. There are dead-end jobs, and many protected class employees have been tracked into these career ending jobs or prevented from entering jobs with potential. Placement tests have been shown to be biased against many protected class employees such as women and minorities. Yet, some organizations still use biased testing. Organization leaders must continue to examine the extent to which the cultural environment affects diverse employees (Avery, 2011; Geva 2006; Konrad & Linneham, 1995).

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MAIN FOCUS OF THE CHAPTER

Issues, Controversies, Problems

Need for Diversity Definition

Despite more than 50 years of efforts by organizations to integrate diversity into their organizations, there has been limited success from the perspective of diverse employees. The central reason for the limited success is because there still remains no clear definition of diversity. To avoid confusion and institute effective execution strategies within diversity initiatives, organizations must clearly delineate a definition of diversity that aligns with the federal government definition of protected classes (Hughes, 2015b; 2016b).

Within this chapter, diversity is defined as protected class employees within the organization as defined by the federal government. This excludes no workplace employees because all employees are in some type of protected class or category. Federal law protects every employees' pay, and many employees have more than one protected class status. Therefore, organizations are essentially diverse; however, the problems then become acceptance of diversity of thought within the individuals in these protected class groups and hiring enough minorities and women to meet the Affirmative Action standards, as applicable, and to reflect the diversity of communities. Recognizing this definition of diversity leaves organizations with the task of developing initiatives that promote healthy, valuable dialogue between and amongst these groups of employees. This definition needs to be taught to all employees and leaders so that they can become diversity intelligent (Hughes, 2016a; Hughes, 2018b).

Need for Diversity Training

Hughes (2014a) suggests that all diversity training should occur at the same time as all other legally, mandated annual training of employees. This would help infuse diversity into the culture of the organization similar to safety training, sexual harassment, and all other forms of training for which organizations have zero tolerance. Once the organization has established a standard of diversity excellence, the organization leaders will then be able to hold individual employees accountable for their behavior and attitudes towards each other (Hughes & Brown, 2018; Hughes, 2019). Table 1 provides a table of four types of intelligence with implications for personal management of self and organization management. The four types of intelligence are emotional (Salovey & Mayer, 1990), cultural (Konyu-Fogel, 2011), intellectual, and diversity.

Emotional intelligence (EI) is the ability to recognize the meaning of emotions and their relationships, and to reason and solve problems on the basis of them and consists of three mental processes: appraising and expressing emotions in the self and others, regulating emotion in the self and others, and using emotions in adaptive ways. EI is also "the ability to perceive accurately, appraise, and express emotion; … to access and/or generate feelings when they facilitate thought; … to understand emotion and emotional knowledge; and … to regulate emotions to promote emotional and intellectual growth (Mayer & Salovey, 1997, p.10). Cultural intelligence (CI) is an individual's desire to understand differences in political, social, cultural, and ethical issues, and to experience diversity in human relations, work environments, and personal adventures (Mendenhall et al., 2013). CI can be measured through an individual's openness to learning, emotional sensitivity, behavioral flexibility, and cross-cultural under-

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standing (Konyu-Fogel, 2011; 2015). Intellectual intelligence (II) is a gauge of one's cognitive ability to analyze and assess information to produce knowledge and understanding. II has been evaluated through an individual's ability to manage uncertainty, recognize patterns, think globally, and differentiate and integrate complex information (Konyu-Fogel, 2011; 2015).

Need for Career Development Evaluation Systems

Currently, there are no career development evaluation systems used within organizations. There are performance evaluation systems that are often contentious, controversial, and demoralizing for employees who are judged subjectively by their superiors and peers. Most often the annual performance reviews are provided once a year and are not representative of the performance of the employee. For lack of a better alternative and because employees feel powerless to voice opposition to the systems, they endure the ratings and judgments that are detrimental to their careers.

Many employees choose to leave organizations because they know that their performance evaluation results do not follow them to their new employer. They avoid combative and argumentative displays with their superiors because they need a job and want to be considered for future career advancement opportunities. To say that performance evaluations, as currently managed, can be suppressive to employee career development is an understatement, but when it comes to protected class individuals, they can lead to the death of an individual's career aspirations. For career development to work for diverse individuals, it is required that the organization provide a supportive climate, supervisors, and coworkers (Avery, 2011; Banks, 2006a; Bingham, Gewin, Hu, Thomas, & Yanchus, 2005; Deal & Kennedy, 1984; Thomas, 2008).

A career development evaluation system would provide a tool to assess the progress that an employee is making towards an agreed upon career development plan established between the employee and the organization. This system need not be aligned with merit pay as performance evaluation systems typically are. The following steps describe the suggested process of establishing a career development evaluation system within an organization:

Step 1: Organization leader and employee establish a career goal for the employee (not directly aligned with pay incentives). This sometimes occurs in skill-based pay systems; however, since the incentive is pay and there is not an infinite level of pay to continuously motivate the employee, it can hinder the employee's progress towards an established goal if the employee perceives that the employee benefits more.

Step 2: Organization leader and employee create and outline the criteria within a career development plan needed to reach the career goal that will benefit both the employee and the organization. This is a critical step because it must be determined at this point whether or not the leader and the employee have the same goals in mind for reaching the endpoint. Even though they have stated a career goal in step 1, step 2 determines if the employee truly understands what knowledge, skills, and abilities are needed to reach the career goal and what is in it for them as they pursue the goal.

Step 3: Establish, a minimum of a year, an analysis meeting time to determine progress towards career development plan goals. Often employees may have individual development plans to develop skills to do their current jobs to organization standards, but there is not a plan that tells the employees how individual develop plan achievement will influence their career growth.

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Step 4: Determine if employee is making needed process towards the goal and enhance and modify strategy for continued success.

The process as described above will only work if there are specific careers established within the organization. The career development plan must include specific internal and external education and training needs that must be accomplished to meet the goals of the specific career path that the employee is pursuing and the organization needs. For example, there is a continual need for science, technology, engineering, and math (STEM) professionals within organizations. How can the organization build career development plans for current employees to meet their needs? Are there employees within the organization who have the desire to move into the current career openings and are being overlooked because there is no career development evaluation plans within the organization?

Career development professionals are compelled to leverage each employee's diversity as a benefit to the organization (Hughes & Stephens, 2012). Evaluating each employee's career development plan will assist with this effort because the differences amongst workers necessitate finding a "fit" between the organization and the individual (Becker, Huselid, & Beatty, 2009; Baird & Meshoulam, 1988; Delery, 1998; Vroom, 1973; Wright & McMahan, 1992).

SOLUTIONS AND RECOMMENDATIONS

To resolve the issue of a definition of diversity and improve results of diversity training, Hughes (2016) suggested the need for DQ training for organization leaders. Hughes also suggested the integration of DQ, diversity, and ethics to improve the integration of diversity efforts into organizations (Hughes, 2019). She further suggested that with DQ, leaders can accomplish organization goals and help employees meet their career goals using workforce inter-personnel diversity (Hughes, 2018). The factors in Table 3 were explored prior to the DQ research that has been and is currently being done by Hughes (2016; 2018a; 2018b), Hughes and Brown (2018), and Lawson and Hughes (2020). The Table has been updated to reflect how organization leader competencies related to the six factors can be accomplished by attending training on DQ, ethical and legal issues, and/or workforce inter-personnel diversity. Applying these strategies can help leaders become diversity intelligent in their knowledge and behavior.

To meet the need of developing career development evaluation systems, organization leaders must have DQ and use their DQ to treat all employees fairly. Hughes (2018c) suggested leaders with DQ could use the workforce inter-personnel diversity as a talent management system. The concept of workforce inter-personnel diversity is a "focus on the ways that individuals differ in (and should be recognized for) their personal characteristics within the workplace despite having the same position classification as a co-worker; this is irrespective of gender, race, or other typical classifications for diversity" (Hughes, 2018c, p. 2). Workforce inter-personnel diversity focuses on differences in employees' job skills based on five values (location, use, maintenance, modification, and time). To optimize workforce performance, organization leaders must distinguish between employees in the workplace. Employers usually focus on understanding employees' personality styles and learning styles and limit employee potential because of biases and other limiting factors. DQ is required because all employees must be diversity intelligent to be able to recognize the strengths and weaknesses of all employees while avoiding any bias towards protected class employees.

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Table 4. Six Factors influential to organization leaders improving diversity efforts and training needs

Factor	Organization Leader Competency	Diversity Intelligence (DQ) Training (Hughes, 2016a; 2016b)	Ethical and Legal Training Hughes (2019)	Workforce Inter-personnel Training (Hughes, 2018c)
1. Communication of Policy and Standards of Peformance (Murphy & Cleveland, 1991)	Diversity leadership can benefit from better communication of policy standards throughout the organization. Execution of diversity policy must be consistent.	X	X	
2. Understanding of Policy (Cleveland & Murphy, 1992)	It is difficult to understand a policy when there is no definition and disagreement regarding the terms being used. Legal versus ethical issue of diversity must be delineated.	X	X	
3. Frame of Reference Training (Bernardin & Buckley, 1981; Day & Suksky, 1995)	Leaders can be trained to use the five values as a common FOR to recognize objective differences amongst employees.			X
4. Time (Bernardin & Villanova, 1986; Cleveland & Murphy, 1992; Murphy, 2008; Tziner, Murphy & Cleveland, 1991; Viswesvaran, 2001)	Leaders must conscientiously invest the time to understand differences and this time must be valued by the organization.			X
5. Motivation and Rewards (Cleveland & Murphy, 1992; Harris, 1994; Porter & Lawler, 1968; Vroom, 1964, 1995)	Understanding what motivates organization leaders and rewarding them appropriately may improve diversity efforts.	X	X	X
6. Accountability (Harris, 1994; Jayne & Dipboye, 2004; Mero & Motowidlo, 1995; Murphy 2008; Schreiber, Price & Morrison, 1992)	Accountability reduces EEOC complaints, labor disputes, and lawsuits associated with diversity and unfairness.	X	X	X

Workforce inter-personnel diversity as a component of a talent management system must be evaluated and sustained to remain a viable tool for leaders and employees in the workplace. Managing workforce inter-personnel diversity requires forward-thinking approaches including establishing unity among employees, valuing employees' qualifications, training and developing employees, supporting employee self-development, providing career pathways, providing management systems that support the pathways, and valuing employees' time. Organization leaders' DQ and their acknowledgment and understanding of all employees provides them with the workforce inter-personnel diversity knowledge to enhance and improve organizational performance. When leaders apply this knowledge, they can develop a career evaluation system that employees can trust to be fair and unbiased.

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FUTURE RESEARCH DIRECTIONS

Future research is needed to expand on the solutions and recommendations provided for the issues, controversies, and problems described herein. Specifically, organization leaders and HRD professionals can develop and evaluate training programs for DQ, ethical and legal issues, and workforce inter-personnel diversity to determine if organization diversity efforts improve. Future research can also develop a DQ scale that can be used to assess leaders' DQ and determine specific training and/or education needs of each leader. The suggestion of a career development evaluation system within organizations in addition to or opposed to the current performance evaluation system demands extensive investigation and consideration and is sure to incite debate amongst and between human resource and career development professionals.

The four intelligences can also be further developed into a typology for a career development evaluation system measure. By extending and examining each of these four intelligences from a diversity perspective, organization leaders can extend their roles towards integrating diversity into organizations and applying diversity intelligent strategies.

CONCLUSION

To improve diversity efforts within organizations, requires new ideas and thought processes from leaders. The future is now and organizations cannot afford to wait to launch diversity intelligent strategies. The participation of all stakeholders within the organization is needed to meet global workplace challenges. This has become abundantly clear during the COVID-19 virus pandemic in America. The successful defeat of the COVID-19 virus pandemic requires the participation of every employee in every organization. The virus does not discriminate as it ravages the nation. All who contract the virus are at the risk of dying unless everyone makes a sacrifice to help flatten the curve of the virus by practicing physical distancing from each other. Physical distancing does not preclude communicating effectively with each other in different ways.

There are no easy solutions to the issues, controversies, or problems faced when battling the COVID-19 virus. There are also no easy solutions to resolving issues, controversies, or problems faced when battling diversity in organizations. The potential solutions and recommendations must not only be introduced to organization leaders, but also organization leaders must launch diversity intelligent strategies and remain diligent in their efforts until successful, competitive advantage changes are achieved.

Attaining DQ and applying the definition of diversity as the federal government has defined it will reduce confusion within the organization when launching diversity intelligent strategies. By providing DQ, ethical and legal, and workforce inter-personnel diversity training to all employees, everyone will begin communicating the same definition in the same way to transform the culture from one of suspicion and uncertainty to one of clarity and certainty. Organization leaders will also have a clear understanding and means of effectively evaluating employees for career development purposes thereby meeting the needs of both the employee and the organization.

Enduring negative treatment because of protected class statuses must be eliminated from the workplace. Society is changing and so should the thought processes of employees within organizations. Launching diversity intelligent participatory strategies and efforts will accomplish changes in equity and inclusion. Organizations must capitalize on differences through fruitful intersections of diverse employees executed appropriately and effectively for and by all stakeholders.

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It is understandable that leaders who have never endured discrimination would be unable to imagine what those who have faced discriminated has endured or experienced. It is almost too much to expect leaders, who have no frame of reference for the experience, to be sympathetic or empathetic towards victims of discrimination; yet, that is what many organizations expect without ever, properly, training their leaders. They are then surprised when employee victims seek outside intervention (e.g. lawsuits, EEOC complaints, department of labor complaints, etc…). The eradication of ineffective training and development of diversity must occur for effective change to occur. Credible DQ, ethical and legal issues, and workforce inter-personnel diversity training programs must be launched by HRD professionals and organization leaders so that employees can receive fair and just treatment from leaders and successful career development will ensue.

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KEY TERMS AND DEFINITIONS

Career Development Evaluation: Annual evaluation of each employee's progress and development towards her career goals within the organization.

Cultural Intelligence: Desire to understand differences in political, social, cultural, and ethical issues, and to experience diversity in human relations, work environments, and personal adventures (Mendenhall, Osland, Bird, Oddou, Maznevski, Stevens, & Stahl, 2013).

Diversity Intelligence: The knowledge to understand protected class employees and the legal mandates and executive orders that established their protection.

Diversity Intelligent: Having the ability to apply diversity intelligence.

Emotional Intelligence: The ability to recognize the meaning of emotions and their relationships, and to reason and solve problems on the basis of them and consists of three mental processes: appraising and expressing emotions in the self and others, regulating emotion in the self and others, and using emotions in adaptive ways.

Intellectual Intelligence: A Gauge of one's cognitive ability to analyze and assess information to produce knowledge and understanding.

Inter-Personnel Diversity: Recognition of the uniqueness of each individual employee on the basis of their individuality and diversity of thought. Regardless of group commonalities, each individual employee is different.

Location Value: Align with the personal characteristics that the employer assesses prior to hiring the individual.

Maintenance Value: Alignment of employee KSAs with organization needs expressed by job analysis and job description and the alignment with the employee KSAs. Organizations must see potential for employee growth during the hiring process.

Modification Value: Acknowledged through the drive and ambition that the employee expressed with regards to their goals and aspiration for wanting the offered job and experience working for the organization.

Time Value: Seen through the quality of work produced, presence at work, and the amount of work done when presented with work to do.

Use Value: Expressed in the cover letter, resume, and interview responses provided by the individual.

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Chapter 83
Responsible Leadership Behaviour as a Determinant of Stakeholders' Health and Well-Being:
A Review and Conceptual Framework

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ABSTRACT

Recent corporate scandals have prompted discussion of the role of business in society. Business leaders are increasingly held accountable for their actions and non-actions in relation to all stakeholders, both internal and external. The emerging challenges faced by business organizations today include economic, social, and environmental demands; globalization; rapid population growth; natural resources exploitation; extreme poverty and debt; global migration; unprecedented inequality; global migration; geopolitical and ecological crises; climate change and other environmental issues; competitive pressure; health issues; new information and communication technologies; and sustainable lifestyles. Responsible leadership represents a new type of leadership, which is better positioned to address these challenges through stakeholder consideration and in the context of sustainable development. Building on existing literature, the aim of this article is to present a conceptual framework of responsible leadership as a potential determinant of stakeholders' health and well-being.

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INTRODUCTION

In recent years, a variety of corporate scandals have brought about a discussion regarding the role of business in society. Consequently, to this, business leaders are increasingly held accountable for their actions and non-actions in relation to all stakeholders and society at large (Pless et al., 2009). Business organizations today face emerging challenges such as economic, social, and environmental demands; globalization; rapid population growth; natural resources exploitation; extreme poverty (rich–poor gap) and debt; global migration; unprecedented inequality; global migration; geopolitical and ecological crises; climate change and other environmental issues; competitive pressure; health issues; new information and communication technologies; and sustainable lifestyles (Sachs, 2019).

In this respect, corporate social responsibility (CSR) has come to be the vehicle by which businesses and their leaders contribute to society. CSR is a concept whereby business organizations voluntarily integrate social, environmental, and health concerns in their business strategy (policy) and operations and in their interactions with different stakeholders (EU, 2011). The social responsibility of business organizations encompasses the economic, legal, ethical, and discretionary expectations that society has of organizations at a given point in time (Carrol, 1999). However, many scholars argue that in order for business to implement CSR and do good for society, a new type of leadership is required: responsible leadership (RL). Although various definitions of RL have been put forward, there is general agreement that it is "a relational process with the various stakeholders where leaders accept the accountability for socially responsible actions as part of their strategic business decisions and strive to maintain a fine balance between the immediate and extended stakeholders" (Pless et al., 2009; Waldman et al., 2020). Building on existing literature, the aim of the present article is to present a conceptual framework of RL as a potential determinant of stakeholders' health and well-being. First, the article identifies the main theories of leadership behaviour and the emergence of RL according to the literature; second, it explains how RL can be a determinant of stakeholders' health and well-being; and third, it proposes a conceptual framework which links RL to stakeholders' health and well-being and allows for the identification of challenges and opportunities.

LEADERSHIP BEHAVIOUR, EMERGENCE OF RESPONSIBLE LEADERSHIP

Traditional Theories of Leadership Behaviour

Most of the earlier literature on leadership behaviours at the start of the twentieth century highlighted theories that viewed effective leadership styles in terms of the traits and behaviours of leaders. However, researchers later introduced other leadership theories such as transformational and transactional leadership, charismatic leadership, shared leadership, authentic leadership, virtuous leadership, servant leadership, and many more (Flocy,2007; Frangieh et al., 2017). As mentioned above, RL has emerged in recent years within academic and practice circles attached to CSR and stakeholder theory (House et al., 1997; Groves et al., 2011; Waldman et al 2011).

Trait theories tried to understand leadership by identifying characteristics that differentiated leaders from non-leaders or good leaders (O'Boyle, 2015). These theories asserted the view that leaders are born and not made, and were supported by behavioural genetic research (O'Boyle, 2015; Barling et al., 2011). Thereafter, behavioural theories of leadership emerged in an attempt to focus on universally

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effective behavioural approaches of leaders. A combination of studies (House et al., 1997) showed the relevance of two key concepts related to behavioural theories: structure (task-oriented), where clear guidelines and procedures to achieve goals were specified; and consideration (people-oriented), where the leader's behaviour centred on mutual respect, trust, care, and concern for their followers (Barling et al., 2011). The initial hypothesis of the behavioural theories was that a leader with a combination of structure and consideration would be effective in guiding their followers to achieve organizational goals as well as in providing these followers with emotional support during their journey to perform at their highest capacity. However, these theories were criticized for being inconclusive, and some suggested that it was better to focus on leadership that evolved to include the situational moderators that were cited as critical variables for universally effective leadership behaviour: time pressure, leader dispositions, follower characteristics, and role ambiguity (Barling et al., 2011).

The criticism of behavioural theories of leadership gave place to situational and contingency theories, which argue that leadership is dependent on the characteristics of the situation, including features of the organization, the workplace, and the followers (Barling et al., 2011) Others suggested that contingency theory should categorize leaders as task-motivated or relationship-motivated (Fiedler, 1971), with task-motivated leaders being more effective in extreme situations (e.g. favourable or unfavourable situations) and relationship-motivated leaders being more effective in moderately favourable situations. In the context of this theory, leader effectiveness is seen as a function of the interaction between the leader and the situation in which the leader is operating. However, this theory has been criticized for being based on results from laboratory settings (Peters et al., 1985). For instance, House proposed the path goal leadership theory to address some of the shortcomings, suggesting four categories of leadership behaviours for effective leadership: participative, directive, supportive, and achievement-oriented. Regarding situational factors, House asserted that leader effectiveness was influenced by the organizational environment, follower characteristics, and job design (House et al., 1997).

The relational theory of leadership shifted the focus from the situational aspects of leadership to relational ones. In this context, the leader–member exchange (LMX) theory emerged, focusing on the dyadic relationship between leader and follower, and thus moving away from the traditional traits and behavioural theories. The LMX theory posits that higher-quality relationships (trust, mutual support, and loyalty) between leaders and followers will result in more positive organizational outcomes than lower-quality relationships (social distrust, contractual obligations, and downward influence) (Barling et al., 2011). However, some researchers pointed out that the LMX theory failed to identify whether the relationship between the leader and followers is unidimensional (Dienesch et al., 1986).

Other scholars then suggested the transformational and transactional leadership theories (Burns, 1978; Bass, 1985). Burns, followed by Bass, provided a better understanding of these theories as well as their differences from existing theories (Burns, 1978; Bass, 1985), arguing that management by exception (poor management), laissez-faire management (absence of management), and contingent reward (good management) are aspects that can be classified under the rubric of transactional leadership. However, the literature on transactional leadership throws open the criticism that contingent reward and management by exception are responses to employees' behaviour coupled with the formal powers accorded to the managers dealing with these employees. According to Barling et al., transactional leadership can be conceptualized as management rather than leadership per se (Barling et al., 2011). In addition, Bass (Bass, 1985) suggested four dimensions of transformational behaviour: inspirational motivation (inspiring followers to foster resilience and self-efficacy), idealized influence (acting with integrity and in the best interests of the organization), intellectual stimulation (encouraging followers to be innovative and

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creative), and individualized consideration (mentoring followers and taking care of their well-being). These dimensions were the basis for the Multifactor Leadership Questionnaire (MLQ) developed by Bass et al., which has been criticized for failing to address whether all four dimensions are equally important in a transformational leader. Nevertheless, other researchers have attempted to improve the deficiencies of the MQL, thus advancing its strengths in the pursuit of new knowledge on transformational leadership behaviours (Alimo-Metcalfe et al., 2001; Rafferty et al., 2004).

Trait theories, behavioural theories, and situational and transformative leadership focus so strongly on the dyadic relation between supervisor and subordinate relation that the narrative has excluded the importance of organizational, social, and environmental variables that can play a role in effective leadership behaviour. However, as mentioned above, the 2008 economic downturn and its consequences for society created a need for a new type of leadership, especially in the era of sustainable development.

The Emergence of Responsible Leadership and Responsible Leadership Behaviour Theory

In today's complex world, with the onset of globalization, societal and leadership challenges will continue to escalate as businesses expand further across national borders. This changing context has contributed to the emergence of specific dimensions of leadership that classify leaders based on their behaviour, actions, or personality (Morrison, 2000). Concepts such as authentic leadership, charismatic leadership, servant leadership, shared leadership, ethical leadership, strategic leadership, and responsible leadership personality have been mentioned by various scholars (Pless et al., 2009; Waldman et al., 2020; Flocy, 2017; Morrison, 2000). RL is a new type of leadership for the twenty-first century, and one that is crucial in the era of sustainable development.

This leadership style is still in its infancy, but various scholars have made valuable contributions to its understanding (Waldman et al., 2020; Groves et al., 2011; Waldman et al., 2011; Maak et al., 2006; Voegtlin et al., 2011; Stahl et al., 2014; Adler et al., 2020). It is argued that existing leadership theories lack the dimensions of responsibility and accountability in their characterization, and that these aspects are critical in our current world of political, social, and environmental challenges (Waldman et al., 2011; Voegtlin et al., 2011; Stahl et al., 2014; Adler et al., 2020). As an expansion of the existing theories, RL can be seen from a normative and relational view. According to Maak and Pless, RL cannot be considered on par with the traditional leadership theories that view leadership from a descriptive approach, but should be viewed from a normative approach (Maak et al., 2006). Maak and Pless posit that RL strongly encourages looking beyond the dyadic relationship of leaders and followers within the organization, to cultivating and maintaining relationships with both followers inside the organization and the various stakeholders outside the organization. In addition, expanding on the social–relational process, Maak and Pless argue that responsible leaders exhibit multiple levels of interaction with different groups, some of which may be in conflict with others: employees, clients, customers, business partners, the social and natural environment, and shareholders (Maak et al., 2006).

The foundations of RL behaviour are thus built on a multilevel interaction process, numerous relational challenges in the dealings with stakeholders, and the mindset to reconcile ethical dilemmas (Maak et al., 2006). It is suggested that responsible leaders build trust, cultivate sustainable relationships, and interact ethically with varied stakeholders and followers to serve the common purpose of building relationships with the various stakeholders. RL requires a strong purpose-oriented leadership style, which is built on

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the solid pillars of stakeholder theory, CSR theory, and the concept of the triple bottom line (Maak et al ., 2006, Stahl et al 2014).Various scholars suggest that RL steps away from the traditional concept of a leader at the top dictating terms and conditions to their followers, and instead focuses on the relational aspect with various stakeholders.

RL also needs to be seen from an economic and stakeholder perspective. Waldman et al. defined key parameters of RL at the strategic level, and suggested that showing responsibility could be the key to leader effectiveness (Waldman et al., 2008). When answering the question of to whom and for what leaders should be responsible, they provided guidelines for individuals who seek to be responsible leaders based on two perspectives: the economic and stakeholder perspective (Waldman et al., 2020; Waldman et al., 2008). The economic perspective is in line with the view of Friedman (Friedman, 1962; Friedman, 1970) that "the business of business is business"; in other words, the moral duty of a manager is to increase the financial return of the business's investors. Waldman et al. further pointed to the principle that an economic-based leadership should be strategic and calculable so as to provide a positive return to shareholders. They also pointed out that RL has a strong sense of values concerning the importance of the needs and interests of a wide variety of individuals who may be affected by the leader's actions and decisions (Waldman et al., 2008). Thus, the decision-making process of a responsible leader involves striking a balance between the various stakeholders of the organization, which may be in conflict with one another. On the other hand, the stakeholder perspective of RL does not really put a calculable value on all actions of a leader, since the accuracy of calculations could diminish over time and changes could occur in the nature of the investment. It is argued that it is not possible to attach a monetary value to cultivating relationships and measuring the strength of each relationship with each stakeholder (Waldman et al., 2008). For instance, Waldman found that CEOs who showed strong economic values were viewed as authoritarian, acting in a commanding and directive manner, while CEOs who adopted a strong stakeholder approach were viewed as visionaries and collaborative in their approach (Waldman et al., 2006). Responsible leaders are expected to lead by example, incorporate stakeholder values into the core purpose, use intellectual stimulation to help followers implement stakeholder values, and demonstrate employee empowerment (Waldman et al., 2008).

In an attempt to explicate how RL differs from related theories, Pless and Maak (Pless et al., 2011) advanced a definition of RL which states that it is a relational and ethical phenomenon occurring in social processes of interaction with those who affect or are affected by leadership and have a stake in the purpose and vision of the RL (Pless et al., 2011). In trying to better understand this new type of leadership, Stahl et al. defined RL behaviour as intentional actions taken by leaders to benefit the stakeholders of the company and/or actions taken to avoid harmful consequences for stakeholders and the larger society (Stahl et al., 2014). The authors posited RL behaviour in two ways — "do good" and "avoid harm" — which they considered to be conceptually distinct categories with different antecedents. They also offered a unified framework linking individual, organizational, situational, supranational, and institutional influences, which has advanced the understanding of how these factors might influence a leader to behave in a responsible manner. In addition, the authors highlighted the moderating role played by situational strength, alluding to organizational culture and performance as well as reward mechanisms that help leaders to do good and avoid harm. Thus, organizations with rigorous and robust CSR strategies should be able to do good actions all the time (Stahl et al., 2014). However, Stahl et al. thought that more needed to be done to further understand what kind of leadership actions fall under the "do good" and "avoid harm" categories (Tomaselli et al., 2019).

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Others argue that RL is not about whether organizations act responsibly, but about how individual senior leaders (e.g. CEOs) within the organizations conduct themselves and make decisions (Waldman et al., 2011). Thus, it is of paramount importance to understand that socially responsible organizations may not always have responsible leaders. It is suggested that RL might determine the responsiveness of such leaders during good times and bad times for the organization. It is the actions of the leader during the various phases of the organization that can determine the leader's level of responsibility and accountability.

Looking at RL at a strategic level, Waldman et al. (2011) pointed out several macro and micro issues. For instance, they suggested that RL was more relevant to the top positions within the organizations (CEOs, CXOs, CTOs). Maritz et al. suggested that it is the senior leadership of business organizations that finds itself in the line of fire when it comes to managerial misconduct or corporate ills (Maritz et al., 2011). Furthermore, Maritz et al. viewed responsible leaders as architects and change agents, and highlighted the critical component of governance and stakeholder relationships that needs to be maintained in the process. They also pointed out that certain leaders in the organizational hierarchy are in a position that offers the freedom to make choices for organizational enhancement (Maritz et al., 2011), and argued that these choices need to be aligned with the social and environmental changes that are constantly affecting business.

Regarding RL and CSR, the CSR pyramid proposed by Carroll suggests four responsibilities: economic responsibility (to be profitable), legal responsibility (compliance with the laws of the land), ethical responsibility (the obligation to do what is right, just, and fair and to avoid harm), and philanthropic responsibility (to be a good corporate citizen and improve the quality of life) (Carrol et al., 1991). Thus, according to Carroll, the social responsibility of business encompasses the economic, legal, ethical, and discretionary expectations that society has of organizations at a given point in time (Carrol, 1979). CSR activities in an organization can be classified under social CSR and strategic CSR activities. Social CSR deals with activities that enhance the social value of the organization.

CSR activities are executed with a strategic vision, and can be tied to the business model of the organization. Strategic CSR activities, while ethical and altruistic in nature, can also contribute to the organization's financial bottom line (Waldman et al., 2006). Groves et al. (2011) have raised concerns that the existing literature on leadership is deficient in studies that examine the value orientation of transformational leaders and how they impact RL outcomes. However, Waldman et al. found in their study of transformational CEOs that intellectually stimulating leaders were able to lead strategic CSR activities aligning CSR with the strategic purpose of the organization (Waldman et al., 2006). Furthermore, the study found that charismatic leaders and intellectually stimulating leaders were not really needed for performing simple social CSR activities. Hence, since RL is aligned with strategic CSR, one could conclude that leaders should possess elements of charisma and intellectualism. However, it should not be concluded that all transformational leaders with charisma and intellectualism transition are responsible leaders (Waldman et al., 2006). There are transformational leaders who have engaged in irresponsible leadership practices, calling into question the values of such leaders and their attitude towards driving socially irresponsible actions. Waldman has argued that the outcome of an organization's culture, practices, and CSR policies could be read as characterizing responsibility (Waldman et al., 2011). Moreover, he cautioned that RL cannot be confused with organizational level phenomena where responsible organizations are considered synonymous with RL. McWilliams and Siegel (McWilliams et al., 2001) offered a framework for calculating the level of CSR investment that maximizes profit for a firm while satisfying the stakeholder demand. As businesses expand beyond their home countries,

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responsible leaders need to be equipped with an understanding that allows them to deal with the broader stakeholders and establish mutually beneficial stakeholder relationships. For instance, Voegtlin et al. (2011) defined RL as a continuum that can range from a non-responsible leader with absolutely no interest in CSR actions to the ideal responsible leader who can be a weaver of great stakeholder relationships which embed strategic CSR activities for the organization (Voegtlin et al., 2011).

While leadership influence can help social CSR to become embedded as the culture of the organization, RL is more evident in strategic CSR, where the leader is expected to display the emotional and intellectual maturity to satisfy a wider set of stakeholders and balance the internal and external objectives of the firm. RL should also be seen from the perspective of sustainability initiatives for business organizations. For example, some have pointed out how true responsible leaders are expected to include the strategic use of CSR to benefit the shareholders, leading to sustainability of the organization (Waldman et al., 2006). It is argued that RL needs to include the views of multiple stakeholders while making decisions; an approach that can also include long-term sustainability (Waldman et al., 2006). However, some argue that although CSR actions have an external focus beyond the organization, there is still very little literature on the leaders who have driven these actions on behalf of organizations. Hence, in order to be a sustainable approach, RL needs to be built on the foundation of CSR, with the leader displaying authenticity and consciousness and acting with integrity. Szekely et al. (2005) argue that RL is about building a society that balances the economic, social, and ecological/environmental aims of the business, and that leaders can do this through expanding the economic growth, shareholder value, corporate reputation, and enhanced customer service mechanisms (Szekely et al., 2005). These activities need to be performed by pursuing ethical and moral business actions that bring value to all the stakeholders and elevate the needs of the society and the social processes involved.

As mentioned above, RL is strictly linked to stakeholders, and so must be viewed within stakeholder theory. A seminal work by Freeman (Freeman et al., 1984), posited two important questions regarding the purpose of the firm and the responsibility of the managers in the firm towards their stakeholders, identifying the latter as any group or individual who can affect or is affected by the achievement of the firm's objectives (Freeman et al., 1984). In the context of Freeman's thoughts, it is this responsibility toward the immediate and extended stakeholders of the firm that takes precedence in RL, based on the foundation of stakeholder theory. It is therefore important to deepen the purpose of leadership based on the foundation of CSR and stakeholder theory. These can be linked to the triple bottom line as espoused by Elkington (1997), who advanced the knowledge that businesses should not just be viewed for their economic performance (as espoused by Friedman) but also for their environmental and social impact. This is where the responsibility element in the actions of the leaders is emphasized, and where leaders transition into responsible leaders (Maak et al., 2006). For instance, Maak and Pless argue that the purpose of leadership can be understood as being to build and cultivate sustainable and trustful relationships with different internal and external stakeholders in order to achieve common objectives (e.g. triple-bottom-line goals), business sustainability, and legitimacy, and ultimately to help to realize a good (e.g. ethically sound) and shared business vision (Maak et al., 2006).

Although sparse, there has been research attempting to link RL and CSR outcomes. For instance, Rowley investigated how leaders in organizations responded to the influence of multiple stakeholders, and found that the duty and responsibility of responsible leaders in the organizations was to balance the conflicting and diverse views of the stakeholders and to respond in a manner that brought the best possible outcome based on the principles of doing good and avoiding harm (Rowley, 1997). Moreover, Rupp et al. found that workers reacted positively to the perception that a firm was socially responsible

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(Rupp et al., 2013). More specifically, the study revealed that job applicants had a preference for working at a business organization they perceived to be socially responsible (Rupp et al., 2013). Elsewhere, Zhao et al. found that RL was positively associated with organizational citizenship behaviour for the environment (OCBE), and that leader identification mediated this relationship. They also found that the relationship between leader identification and OCBE was positively moderated by the perceived role of ethics and social responsibility (Zhao et al., 2019). This also moderated the indirect effect of RL on OCBE through leader identification, such that this relationship was stronger when the perceived role of ethics and social responsibility was high (Zhao et al., 2019).

Although the understanding of RL has advanced in the past decade or so, there is still a lack of knowledge on the pathways through which it impacts organizational outcomes as well as internal and external stakeholders. The most solid proposal so far was put forward by Doh and Quigley (Doh et al., 2014), in a seminal work which argues that responsible leaders can leverage various stakeholders using a psychological pathway (trust, ownership, and commitment) and a knowledge-based pathway (options, creativity, and knowledge sharing) to influence effective outcomes.

RESPONSIBLE LEADERSHIP AS DETERMINANT OF STAKEHOLDERS' HEALTH

In the past few decades, much research has been carried out on the relationship between leadership behaviour (using the traditional leadership behaviours described above) and employee health and well-being (Schmidt et al., 2014). Leadership behaviour has been associated with sickness, absence (Kuoppala et al., 2008; Liu et al., 2009; Montano, 2016), stress, depression (Perko et al., 1998), health behaviours (Schmidt et al., 2014), and affective well-being (Schaufeli et al., 1998). Other studies have reported that employee health can be promoted through specific leadership behaviours and styles (Kuoppala et al., 2008; Skakon et al., 2010; Haslam et al., 2011). For example, a systematic review spanning three decades of research on leadership behaviour, the quality of the relationship between leaders and employees, and employee stress and well-being, found that positive leader behaviours such as feedback, trust, confidence, support, and integrity were associated with better affective well-being, reduced stress, and improved coping with stress among employees (Skakon et al., 2011). In contrast, the review also found that negative leadership behaviours such as low support, abuse, and control were associated with poor well-being and stress (Skakon et al., 2011). The authors argued that negative leader behaviour was more likely to be exhibited by leaders who are stressed, which in turn affects their relationship with employees (Skakon et al., 2011). Transformational leadership has also been found to be associated with a low degree of employment stress as compared to transactional and laissez-faire leadership (Skakon et al., 2011). Furthermore, Schaufeli et al. (1998) argued that leaders who were supportive, who empowered their employees, and who had a high-quality relationship with their employees contributed to preventing employee stress, enabling stress coping, and improving affective well-being (Schaufeli et al., 1998). More recently, other studies have found a relationship between leader and employee and organizational health (Novotina, 2015; Witt et al., 2016; Inceoglu et al., 2018; Molnar et al., 2019).

Wegge et al. suggested that the relationship between traditional leadership and employee health goes beyond the personal interaction between employee and leader, and pointed out four potential mechanisms that could explain this relationship: system-focused action (e.g. promoting healthy work designs), moderating action (e.g. alleviating the impact of stressors in the workplace), climate control (e.g. cultivating a shared perception of health in the team), and modelling (e.g. acting as role models for health

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and exemplifying a particular health behaviour) (Wegge et al., 2014). For example, one study found that supportive leadership behaviour was associated with self-rated health among employees even after adjusting for other factors including work-related stress (Schmidt et al., 2014). In addition, a Swedish study found a close response relationship between managerial behaviours and ischaemic heart disease among employees (Nyberg et al., 2005). Interestingly, the available evidence shows that the different types of traditional leaderships are related to employee health in their own specific ways (Rowold et al., 2013).

Transformational leadership characterized by high credibility and a leader who motivates followers with attractive visions, stimulates employees to creative and independent thought, and takes the time to provide support and development to individual employees, is positively associated with psychological affective well-being (Liu et al., 2009; Arnold et al., 2007; Kelloway et al., 2013; Tavfelin et al., 2011; Nielsen et al., 2012), personal accomplishment, and work engagement (Vincent-Höper et al ., 2013). In addition, a meta-analysis found a negative relationship between transformational leadership and negative well-being (e.g., burnout, strain) (Vincent-Höper et al., 2013). Transactional leadership is characterized by active management by exception and contingent reward. Active management by exception refers to leaders who actively monitor errors and deviations from the expected norm, in order to take corrective measures before these errors appear (Wegge et al., 2014). Contingent reward is conceptualized as leadership behaviour that sets clear expectations and goals, and rewards employees for goal achievement. While there is good evidence that contingent reward is positively correlated with job satisfaction (Vincent –Höper et al., 2013; Judge et al., 2004) and negatively correlated with stress and strain (Stordeur et al., 2001), there are conflicting results regarding management by exception (Vincent –Höper et al., 2013).

LMX leadership, which is based on the dyadic relationship between leader and subordinate, has been found to be associated with employees' subjective well-being (Rousseau et al., 2008), good mental health (Singh et al., 2009), and job satisfaction (Harris et al., 2006; Hooper et al., 2008; Spar et al., 2008). Other studies have found LMX to be negatively related to depression in the workplace, turnover intentions, psychological distress (Rousseau et al., 2008; Sparr et al., 2008) stress, and burnout (Harris et al., 2006; Gregesten et al., 2014). Despite these associations between different types of leadership and employee health and well-being, some argue that there is a potential overlap between the leadership constructs which needs to be considered Rowold et al., 2013). Many leadership studies on employee health have used single leadership constructs or lacked theoretical reasoning about leadership constructs that might share common elements based on specific dimensions of theoretical overlap (Rowold et al., 2013). For instance, in a study that assessed possible convergence across leadership constructs, Rowold et al. (2013) found that such convergence did exist, and that transformational leadership and LMX included the development of a confidential relationship with the employee, which positively influenced their health (Rowold et al., 2013). However, a meta-analysis by Judge et al. found that transformational leadership was correlated with contingent reward (related to transactional leadership), thus suggesting that transactional and transformational leadership are so closely related that it is difficult to disentangle their unique effects (Frangieh et al., 2017; Gerstner et al., 1997). On the other hand, Strum et al. pointed out that scale contingent reward correlated highly with leadership success, similarly to transformational leadership (Sturm et al., 2011). According to Wang et al., neither transformational or transactional leadership can explain additional variance depending on the specific outcome being studied (Wang et al., 2011). Graen et al. suggested that LMX leadership involves a transformational and transactional process; a dyadic exchange that starts close to transactional leadership, and with time creates an effective LMX relationship (Graen et al., 1995). In testing for convergence of leadership constructs, Gregsten

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et al. found that LMX leadership predicted employee well-being indicators better than other types of leadership (Gregsten et al., 2014).

Wagge et al. introduced the notion that leadership behaviour should be considered as a determinant of health (specifically employee health) at work because it has a substantial influence on employee motivation, satisfaction, well-being, sick leave, and early retirement (Wegge et al., 2014). Furthermore, the authors argued that there are five pathways through which leadership behaviour influences employee health. The first pathway relates to the ways in which the health of employees is affected by direct actions of the supervisor. This encompasses motivating and supportive behaviour, but also destructive forms of leader behaviour that have a direct impact on the immediate health of employees. The second pathway comprises actions that are aimed less at individual workers and more at the level of the team or organization as a whole. Here, the impact of leadership on health is felt through its impact on contextual variables such as the availability of social or organizational resources within a specific work system that have the capacity to affect employees' ability to cope with stressors at work. The third pathway describes moderator/buffer effects that are specified within a number of stress models. For example, leader behaviour can act as a buffer against high levels of demand at work or as a factor that serves to mobilize existing resources (Wegge et al., 2014).

The fourth pathway is at the team/organizational level, and focuses on shared perceptions and/or actions within teams. The leadership affects employees' collective assessment of work-related psychosocial stress, for example in helping to shape shared perceptions of a situation as challenging, threatening, or rewarding. Finally, the fifth pathway is conceptualized as a bi-directional feedback loop. This points to the fact that leaders can be sensitive (or not) to the health of employees and as a result can engage in specific behaviours to improve their well-being. In addition, the health of employees can be a resource for leaders (and vice-versa) that helps them achieve their own goals and this in turn can have an impact on the health and well-being of all parties (Wegge et al., 2014).

The available research on the role played by the traditional leadership behaviours described above concentrates only on the employees (the internal stakeholders) within business organizations. However, the present article aims to go beyond this, to reflect on the impact of responsible leadership behaviour on the health of stakeholders in general: employees, clients, and society (Macassa et al., 2017). As Maak and Pless stated, RL is geared toward the management of a corporation's interactions with society; and in order to address the corporation's various stakeholder concerns, responsible leaders can contribute to the multiple bottom lines of economic, social, and environmental performance (Maak et al., 2006). In this way, responsible leaders will enable and moderate interactions with the various stakeholders of the company (Maak et al., 2006).

Responsible leaders are also expected to help address current and future challenges such as rising inequality, global warming, global migration, and poverty, as well as putting pressure on governments, international organizations, and business organizations to contribute to a sustainable future for people and the planet (Maak et al ., 2006; Macassa et al., 2017). Because responsible leaders will care about helping to solve global challenges, it is argued that responsible leader behaviour should be seen as a social determinant of internal and external stakeholder health, thus contributing to reducing inequalities in health and promoting equity in health (Macassa et al., 2017). The social determinants of health are defined as the conditions in which people are born, grow, live, work, and age (Solar et al., 2010). These conditions are shaped by the distribution of money, power, and resources at the global, national, and local levels. The social determinants of health are mostly responsible for health inequities; that is, the unfair and avoidable differences in health status seen within and between countries (Marmot et al., 2014;

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LucyK et al., 2017; Donkin et al., 2017). Thus, taking a social determinant perspective, responsible leaders are also expected to contribute to health promotion across the corporation's stakeholders (Macassa et al., 2017). For instance, in an attempt to relate CSR and health promotion, Monachino et al. argued that corporations are expected to act regarding health protection, health promotion, and the social determinants of health (Monachino et al., 2013). Health protection aims at preventing and mitigating threats to human health through safety standards of goods and services, as well as complying with employee and occupational health standards. Regarding health promotion, corporations are thought to contribute in the process that enables people (in this case internal and external stakeholders) to increase control over their health via distribution and marketing strategies which will impact on consumer lifestyles and behaviours and convey powerful health values (van Dierendonck et al., 2011).

CONCEPTUAL FRAMEWORK: RL - STAKEHOLDERS' HEALTH, WELL-BEING

This article proposes a conceptual framework for understanding how responsible leadership behaviour (through a stakeholder theory and CSR strategies) can affect the health outcomes of internal (employees) and external (consumers and population at large) stakeholders through individual and organizational processes. It offers an adaptation of Doh and Quigley's original model of RL in the context of public health/health promotion (Zhao et al., 2019). Thus, the focus here is not only on the managerial and organizational levels of business organizations, but also on the larger public health and health promotion environment.

The original model by Doh and Quigley proposes psychological and knowledge-based pathways, and argues that RL is more inclusive and more likely to resonate psychologically at the individual level, resulting in high levels of engagement within organizations (Zhao et al., 2019). In addition, it is thought that responsible leaders are willing to engage with varied stakeholders (including those of different cultures) in a meaningful way, creating an environment of psychological trust and respect that promotes positive outcomes among stakeholders. Moreover, in the case of internal stakeholders (employees), an engaged responsible leader can positively influence their creativity, empowerment, and intrinsic motivation.

Responsible leaders are suggested to have a servant behaviour (Waldman et al., 2020). The servant leadership dimension is related to creating value for the community, which is a natural point of integration. According to van Dierendonck, there is support for a positive association between servant leadership and employee satisfaction, commitment, and performance (van Dierendonck, 2011). Van Dierendonck also points out that it is through the development of high-quality leader-follower relationships and a psychological climate of trust and fairness that responsible leaders contribute to positive outcomes at the individual, team, and organization levels. At these levels, responsible leaders might be perceived to contribute to team members' safety, thus creating a good environment for learning and performance. It is also suggested that the inclusiveness fostered by a responsible leader can be considered a key antecedent for the psychological safety of internal stakeholders. At the organizational level, the psychological benefits of a stakeholder-oriented approach creates a virtuous cycle of positive outcomes where internal stakeholders (employees) trust the leader, feel committed to the objectives and vision of the organization, and feel emotional connection to the work and organization, which could also affect individual motivation.

The second pathway proposed by Doh and Quigley is knowledge-based (Doh et al., 2014). They posit that responsible leaders with high consideration for all stakeholders are well positioned to navigate the context in which the organization operates, as well as to encourage knowledge to flow in a functional

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way within and across the organization and among internal and external stakeholders. A study by Van Dierendonck supported the idea of the stakeholder-oriented approach, noting that leaders who understand the wider society in which their organizations operate are associated with positive individual outcomes through psychological mechanisms such as ownership and trust (van Dierendonck et al., 2011). Doh et al. pointed out that the two pathways are interrelated, and influence all stakeholders' outcomes at the individual, team, organizational, and societal levels through CSR strategic activities (Doh et al., 2014).

In our adaptation of this model (Figure 1), the first block depicts the individual characteristics of the responsible leader (visionary, steward, servant, citizen, change agent/networker, facilitator, expert) as well as leadership style (instrumental or integrative). The individual characteristics of the leader will interact with factors at the organizational and societal levels (second block) via psychological and knowledge pathways, which in turn will influence the health and well-being of internal (employees) and external (society) stakeholders in the third block. The first mechanism involves the incorporation (by the responsible leader) of CSR strategies into the business strategy and organizational processes that contribute to employee health, well-being, and wellness. Based on the hypothesis of Doh et al. (2014), we argue that responsible leaders can use CSR strategic activities to create positive outcomes at the individual, team, and organizational levels, contributing to increased trust, intrinsic motivation, and satisfaction among employees that in turn can improve health and overall well-being.

In relation to employees (internal stakeholders), business organizations would need to go beyond occupational health and safety to also promote workplace mental health and wellness for a sustainable workplace as part of their internal CSR strategy (Doh et al., 2014). The Centres for Disease Control define workplace wellness as activities that help employees to take responsibility for their lifestyle choices, educate the workforce about hazards and opportunities for wellness, enhance employee productivity, reduce absences and idleness, reduce health care costs, and shift the health care paradigm from treatment to prevention (CDC, 2018). Czabale et al. suggest that responsible leaders should use CSR to promote mental health through both skill training and improving conditions at the workplace. Skill training can include knowledge about stress and coping, training of social skills such as occupational stress management, problem-solving, communication, cognitive skills, and progressive muscle relaxation to better cope with stress, while improvements in the workplace may involve the modification of external characteristics of work such as time, work organization, scheduling, and employer-employee relationships (Czabala et al., 2011). The inclusion of psychological risk management in organizational CSR strategies should be seen as a good business practice, as it can contribute to a reduction of societal problems (by preventing the shift of problems to society workers and their families) and increase the productivity of the workforce in terms of less absence and positive engagement (Tomaselli et al 2019; Williams et al., 2003). In addition, responsible leaders will be more prone to take into account human rights and gender equality in the workplace, which has been related to economic efficiency and economic development (Williams et al., 2003).

In our model, we see RL behaviour influencing external stakeholders' health and well-being (the community/population at large) through a societal mechanism (intermediary block, Figure 1). The second mechanism entails the impact of the leader's behaviour on external stakeholders through strategic CSR activities. The leader's behaviour will interact with societal characteristics such as the environmental, cultural, socio-economic, and political context to influence external stakeholders' health outcomes. Again, here, using the psychological and knowledge pathways proposed by Dough and Quigley, responsible leaders are expected to also have consideration for external stakeholders through their servant behaviour (Doh et al., 2014). Servant responsible leaders are expected to better understand and navigate

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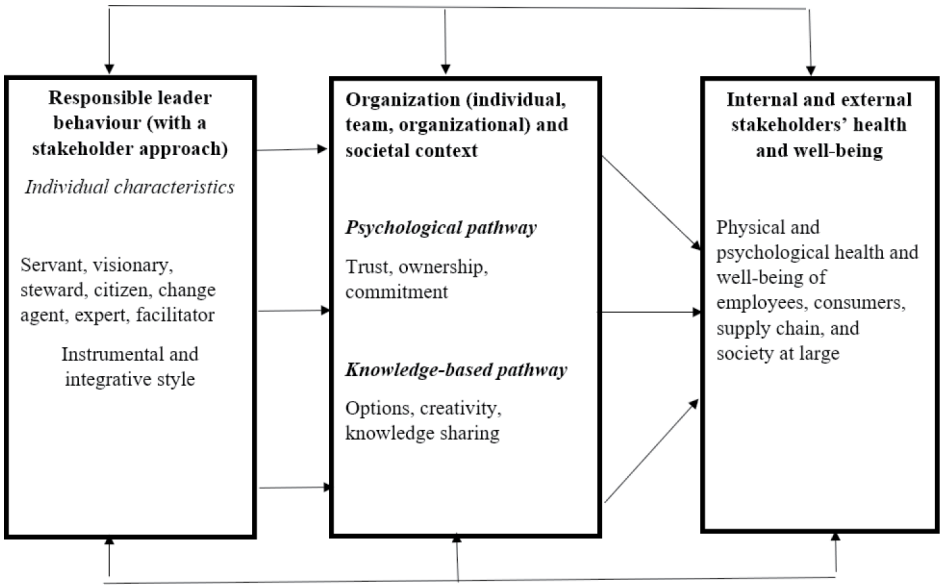
the societal challenges within the contexts in which their organizations operate, as well to encourage knowledge to flow in a functional way within and across the organization and among internal and external stakeholders. It is argued that responsible leaders could influence external stakeholders' health and well-being through support of CSR strategies and psychological mechanisms of accountability and trust (Van Dierendonck et al., 2011). For instance, Stahl et al. posit that responsible leaders would apply a stakeholder approach in navigating and managing across cultural boundaries in order to identify and anticipate critical socio-economic and societal problems and trends so that they can respond more appropriately (Stahl et al., 2010).

Our proposed framework includes two extra dimensions among the RL behaviours in the first block (Figure 1), inspired by Voegtlin et al.'s "role models". According to Voegtlin et al., the term "role models" encompasses the various obligations associated with the roles of a leader in a business organization and the correspondingly heterogeneous accountability that leaders might perceive in their roles (Voegtlin et al., 2019). They argue that the roles of expert and facilitator, together with the role of citizen that was already suggested by Doh and Quigley (2014), cover accountability towards internal and external stakeholders and are related to basic human motivation; for example, the motivation to care about one's task, to care about those one is entrusted with, and to care about social welfare (Voegtlin et al., 2019). Furthermore, Voegtlin et al. argue that the expert's role has to do with the fact that leaders structure tasks and engage employees in them. And the facilitator role include leaders motivating employees and helping to integrate within the organization (Voegtling et al., 2019).

The role of citizen translates into a responsible leadership that meets its moral obligations to the environment and to society, including future generations (Voegtlin et al., 2019; Hernandez, 2012). In addition, it is assumed that citizen leaders are positioned to see the importance of sustainability decisions and display citizenship behaviours that seek to create long-term value in society (Hernandez, 2012; Patzer et al., 2018).

Figure 1. Conceptual framework for responsible leadership behaviour and stakeholder health outcomes (Authors' own adaptation from Doh and Quigley, 2014)



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Many business organizations use informal knowledge of contextual culture and norms to develop health and wellness initiatives that go beyond their employees to target the broader population. Such actions allow companies to influence health outcomes across the value chain (Webber et al., 2010). There are those who argue that the increasing role of business and corporation involvement with health initiatives and programmes is a recognition that governments alone may not be able to solve all problems, and that businesses or industries are able to influence employees, local communities, consumers, and business partners that provide critical supplies and services for the general public (Zwetsloot et al., 2008; Zwetsloot et al., 2004).

Concerning why business organizations should care about society beyond the workplace, Zwetsloot et al. argue that societal challenges may enter the enterprise in one way or another, and that the organizations have to cope with them (Zwetsloot et al., 2008). Along the same lines, Webber et al. argue that business organizations need to understand that even if they take care of their employees in the workplace, it is essential to invest in the communities workers come from if their investments are not to be compromised in the long term (Webber et al., 2010). In a study addressing the contribution of the Johnson and Johnson Company in the African context, Chattu reported that the company contributed to fighting the HIV epidemic as well as improving the quality of life among those living with illness (Chattu et al., 2015). In the US, retailers like Walmart provide low-income and disadvantaged communities and neighbourhoods with access to affordable and nutritious food (BSR et al., 2015). A study of CSR across six pharmaceutical companies found that the firms practiced population health related initiatives ranging from mobile health to preferential drug pricing and employee exchange programs in low-income countries (Droppert et al., 2015). All the above examples illustrate that although no systematic name is given to these CSR actions (called philanthropic or charitable actions), many corporations are already taking part in actions to promote health to customers, suppliers, local communities, and the public. Due to these increased actions taken by corporations to improve population health in a variety of contexts, there is a call for closer collaboration between business organizations and public health and health care professionals to identify evidence-based interventions that work, the catalysts and motivators for community health improvement, and the metrics for workforce and community health regarding self-reported health, life expectancy, individual health behaviours, socio-economic factors, and the physical environment (Macassa et al., 2017; Hernandez, 2012). In the proposed model, we add responsible leadership style as a dimension that can characterize the responsible leaders' behaviour in their quest to work for all stakeholders' health and well-being. It is argued that integrative responsible leaders will be more prone than their instrumental counterparts to engage in heath promoting CSR activities aimed at internal and external stakeholders (Macassa, 2019).

CONCLUSION: OPPORTUNITIES AND CHALLENGES

This article proposes a framework linking responsible leadership behaviour to internal and external stakeholders' health and well-being outcomes. To our knowledge, this is the first such proposal. Although the framework does not depict all the potential pathways that might be identified, we hope for it to stimulate a discussion on how the new and ever-evolving concept of RL can contribute to making a business case for internal and external stakeholders' health promotion in the era of the Sustainable Development Goals (SDGs) and Agenda 2030. However, much remains to be discovered and understood regarding what characterizes a responsible leader, let alone how to measure it (Waldman et al., 2020;

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Voegtlin et al., 2019). Waldman et al. recently revisited the concept of RL and argued that probably it should be considered as an orientation or mindset (mental framework) of how people think, feel, and act in challenging situations (Waldman et al., 2020). In another recent study, Voegtlin et al. attempted to measure RL using dimensions from what they called the "roles model" to better understand the impact of responsible leadership within the area of management. There is a need for research to assess how the few available measures of RL (e.g. those suggested by Voegtlin et al. (2019) can be empirically related to stakeholders' health and well-being outcomes. Nevertheless, we believe that amid the current and future challenges and the need for inter-sectorial collaboration in order to achieve Agenda 2030 and specifically SDG 3 (health for all at all ages), public health professionals need to investigate how RL can contribute to health and well-being beyond the workplace.

The conceptual framework presented in this article is an overall attempt to model the potential pathways through which RL behaviour may affect stakeholders' health via CSR strategies at the organizational and societal levels. Thus, it is important to bear in mind that there is no one-size-fits-all approach. It is likely that individual business organizations will decide the scope, level, and type of investments in population health that will suit their situation and context where they operate. However, as shown by the examples above, there are opportunities for responsible leaders in businesses across the world to help promote population health as well as health and wellness in workplaces as a broader stakeholder and value chain issue. This would reflect business organizations changing paths towards a CSR agenda that sees the overall population as being linked to other important social, environmental, and business challenges.

AUTHORS' CONTRIBUTIONS

GM developed the concept and produced the first complete manuscript draft. GT and JS critically reviewed the manuscript. GM, GT, and JS reviewed the final version of the manuscript. All authors have read and approved the final manuscript.

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Chapter 84
The Role of the Supervisor in Creating and Maintaining an Emotionally Healthy Workplace

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ABSTRACT

Supervisors, be they employed in higher education or in other industries, operate in capacities that allow them to shape organizational cultures within their departments, divisions, colleges, or broader units. Within the higher educational model, this means that supervisors are uniquely placed to counteract negative elements within the culture of academia, which historically has tended to prioritize individual competitive output, with alternative models that may offer improvements to the emotional health and well-being of higher education employees. This chapter seeks to describe the impact of stress on the health of workers, the employment stressors that are unique to higher education, and the processes by which supervisors in higher education can use their positional power to counteract said stressors and improve academic organizational cultures. The chapter includes practical suggestions for supervisors to enhance wellness and decrease emotional harm in scenarios common to the higher education workplace as identified via social media crowdsourcing.

INTRODUCTION

This chapter will explore the roles of supervisors in establishing and maintaining humane and emotionally healthy workplaces within the field of higher education. In doing so, the author asserts that supervisors are, by virtue of their positional power, that is to say their formal authority as granted by both title and their place within an organizational structure, in a position to establish and enforce cultural norms for their immediate employees and organizational units, via both formal power structures inherent to their position and the information cascade phenomenon. Given this, supervisors should (and are indeed obligated to) establish and enforce cultural norms that foster humane and emotionally healthy

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work environments that allow employees to maintain a sustainable work/life balance while still meeting organizational needs. Further, supervisors must act mindfully in the workplace, with the full awareness that their choices will be viewed by employees as articulating expectations and norms and may encourage employees to make or avoid similar choices. Put otherwise, supervisors must fully consider that which they celebrate, condemn, and normalize, as these actions may be given unintended weight and could create a culture of expectations that are unhealthy for both individuals and the organization. Additionally, the author asserts that transparency of intentions and expectations, when combined with mindful choices on the part of supervisors, can assist in creating a humane and emotionally healthy culture that does not lionize behaviors and actions that are associated with exhaustion, burnout, and poor work/life balance.

BACKGROUND

The necessity of developing and maintaining emotionally healthy workplaces would seem to be, at first glance, self-evident. It does not take any particularly creative leaps of logic to imagine that healthy, happy workers are more likely to be efficient, productive, and creative than those who are exhausted, overwhelmed, or experiencing burnout. However, despite this seemingly obvious notion that emotionally healthy workplaces are beneficial for both workers and employers, they appear to be increasingly rare. A 2013 study by the American Psychological Association determined that 33% of working Americans reported feeling extreme stress, while 48% of the same pool of respondents indicated that their stress levels had increased in the past five years. A survey conducted in 2017 demonstrated that the uptick in US employee stress levels continued, with 61% of respondents reporting that they felt exhausted and 85% reporting that they felt run down and drained of physical energy (Statista Survey, 2019a, 2019b). More worrying still, despite high rates of stress, burnout, and overwork, 90% of respondents indicated that they felt they were achieving less than they should (Statista Survey, 2019b). This suggests that in addition to the negative emotional impacts generally associated with stress, at least some respondents were also beginning to experience sensations of guilt associated with a perceived lack of progress or industry, which may further exacerbate poor mental and emotional health conditions.

Excessive stress and sustained poor emotional health also impact the body. In his book *Overworked and Overwhelmed: The Mindfulness Alternative*, executive coach Scott Eblin notes a 2014 study by the Benson-Henry Institute for Mind Body Medicine that reported between 60 and 90 percent of visits to the doctor are prompted by stress-related complaints (10). More recently published medical reports, such as those provided by the Mayo Clinic and the Cleveland Clinic, identify a whole suite of physical complaints associated with prolonged stress, including headache, muscle pain, chest pain, depression, anxiety, changes in sex drive, gastrointestinal distress, sleep disturbances, grinding-related tooth damage, weight loss, weight gain, hyperhidrosis, tachycardia, and others (Cleveland Clinic, 2015; Mayo Clinic, 2019; Richards, 2018). Stress management, physical wellness, and emotional wellness are thus necessary priorities for organizations that wish to keep employees both working optimally or, over time, working at all.

Of course, the development of an emotionally healthy and humane work culture involves the participation of many people. Individual efforts must combine with institutional policies and organizational values to ensure the successful prioritization of wellness-friendly behaviors and processes that benefit all employees while still meeting the overall goals of the organization. Within most organizations, whether based in higher education or other industries, those in a supervisory capacity have additional power to

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build, maintain, and enforce a culture that prioritizes emotional wellness. This additional capacity to influence organizational culture results from the unique positioning of supervisors at the intersection of the seven forms of recognized social and organizational power: titular, coercive, reward, referent, connection, informational, and expert (French & Raven, 1959; Murphy, 2017; Raven, 1992). Titular power is, in effect, the power granted by rank within an organizational hierarchy, whereas coercive and reward power is the power to punish or reward respectively. Referent power, on the other hand, is the power given by others when they perceive an individual is in a position of power and influence. Connection power is perhaps best defined by power born from successful networking. It is related to informational power, which is the power granted by knowledge of organizational or otherwise influential priorities, decisions, discussions, changes, etc. that are not yet known to all. Informational power is related to, but somewhat different from, expert power, which is knowledge developed; as a result of experience that causes others to defer to opinions held by those who are perceived to be more informed or more skillful. While all members of an organization can and do have access to these power bases, the nature of a supervisor's work, responsibilities, and privileges situate them in the nexus of all seven power bases more regularly than those who are not in a supervisory role. By mindfully leveraging these power bases, supervisors can intentionally exert significant influence on organizational culture and tolerance for wellness-friendly behaviors.

Even supervisors who do not intentionally engage in establishing and maintaining organizational norms in the areas of wellness exert impact thanks to the information cascade process. Drawn initially from behavioral economics and network theory, the information cascade model asserts that individuals tend to make the same choices sequentially based on their observations of the success or failures of those who made the same or similar decision before them (Bikhchandani, Hirshleifer, & Welch, 1992). Applied to workplace culture, this means that employees will interpret the culture and expectations based on either the reaction of those in supervisory capacities to the choices made by those whom their organizational power allows them to reward or punish, or by the behaviors and choices modeled by those in supervisory capacities themselves.

The first formulation of the intersection between organizational culture and the information cascade model is easy to grasp, and one in which most employees have engaged to some degree. For example, anyone who has ever seen a colleague be shouted out of an office for asking for vacation time during a particularly pressing deadline knows not to make a similar request, and to plan future leave requests with more strategy. Similarly, employees who have repeatedly seen management approve early dismissal for employees to see their child participate in an after-school sport or other extracurricular pursuits may feel confident enough to assure their child they will be in attendance for the school talent show before formally requesting the time off.

The second formulation is also easy to understand and yet often forgotten or simply underrated. Most supervisors recognize they serve dual functions as a leader and a model but perhaps do not always appreciate the extent of the impact their modeling has on their employees or, perhaps, even beyond the work environment. As Eblin notes:

When you're a designated leader, your rocks roll downhill. If you're generating stress, your people are absorbing it and dealing with it. If you're burned out, stressed out and frantic from not getting enough sleep, not exercising and not getting enough time away from work, then your team or organization is going to reflect that.

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The impacts are broader than work really. If you're taking your stress home with you, your people probably are too. From there, your rocks keep on rolling with impacts on the health of your people and their families and the quality of their connections to the broader community.

Wondering if any of that applies to you and your team? An easy way to check is to step back and look at how the people in your team or organization are operating. If they're making poor decisions and running around like their hair is on fire, in all likelihood that's on you and the rest of the leadership team. Your people are just reflecting back what they're seeing from you.

The good news, though, is that the opposite is also true. If you're leading and living at your best, it's much more likely that your people will too. You really can't overestimate your impact (Eblin, 2019).

Eblin's reminder about rocks rolling downhill echoes a familiar, if more obscene, bit of military jargon regarding an entirely different sort of material in a similar downhill slide. Regardless of the formulation, the message is the same: leaders and supervisors have immense power over the quality of their employees' day, week, and/or career experience and, as such, must be continually aware that culture cascades from them.

MAIN FOCUS OF THE CHAPTER

Issues, Controversies, Problems

The function of supervisor as a cultural cascade driver within the context of the higher education profession can be particularly fraught. Within the profession, information silos abound, faculty often function as independent contractors (or actually are independent contractors, in the case of adjuncts), historical whiteness and financial privilege permeate the industry creating a treacherously hidden curriculum that impacts both students and higher education practitioners, and the tenure process builds in a period of extended job insecurity that leaves many exhausted and psychologically damaged (Kinman G. & Wray, S., 2013; Shaw, C. & Ward, L.). These features combine all too easily to create cultures wherein individuals may feel their value is related only to their output. In this model, struggles to cope are cast as examples of personal weakness rather than intrinsic problems baked into the profession and its traditional organization. Those in a supervisory capacity can, however, mitigate these damages by both acting mindfully and by being transparent about the impact higher education employment can have on the overall emotional wellness of practitioners within the field. In discussing how supervisors can leverage their power in this way, a working definition of both mindfulness and transparency is required.

Mindfulness has, in recent years, achieved something of a buzzword status and as such may be viewed by some with doubt or even disdain. This antipathy for the term may be due to its slippery nature and its position within a field of disparate practices and understandings that is vastly broad and can be applied in numerous ways. The multifaceted nature of mindfulness is not a detractor but, rather, a benefit, as it allows the term to be defined narrowly when needed.

Within the context of this chapter, mindfulness will be based on the definition provided by Dr. Jon Kabat-Zinn, founder of the Mindfulness-Based Stress Reduction (MBSR) program housed at the University of Massachusetts Medical Center. Kabat-Zinn argues that mindfulness is "the awareness that

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arises by paying attention, on purpose, in the present moment and nonjudgmentally" (NourFoundation, 2014). Eblin deconstructs Kabat-Zinn's definition, noting:

Awareness *is another word for noticing what's going on.*

Paying attention on purpose *suggests that we can make a choice to be aware and notice.*

In the present moment *means focusing on what's happening right now, not ruminating on what's already happened or worrying about what might happen.*

Nonjudgmentally *means we don't waste mental or emotional energy labeling events or thoughts as good or bad. We just acknowledge what we're seeing, thinking, or feeling (Eblin, 2014, p.19).*

Eblin continues, explaining more broadly that Kabat-Zinn's definition suggests that "mindfulness is about waking up and being aware of what you're thinking so that you can assess the impact of your thoughts and then make an intentional choice about what to do next. Mindfulness is about managing that gap between your thoughts and your actions" (Eblin, 2014, p.20). To disrupt the aspects of higher education employment that may induce poor emotional wellness, supervisors must develop competencies which permit them to be mindful about their own moods, emotions, and mental state so that they can react, without judgement, to meet both their needs and the needs of their employees while still meeting the goals and needs of the broader organization. Failure to develop mindfulness competencies increases the likelihood that employees feel abandoned to a system that has already demonstrated a lack of concern for individuals and/or individual emotional wellness. A supervisor who does practice mindfulness, on the other hand, better situates themselves to understand concerns shared by employees and to respond thoughtfully, rather than emotionally.

Mindfulness skills can also be applied by the supervisor when assessing their own concerns and needs, ensuring they also benefit from thoughtful reaction rather than knee-jerk first responses. A series of texts from the Arbinger Institute (*The Anatomy of Peace*, *Leadership and Self-Deception*, and *The Outward Mindset*) describe the sensation of failing to be mindful as stepping into "the box." The "box" is an emotional blinder that prevents those within it from achieving their best intentions, instead of placing them at loggerheads with others and trapping both in a continuous exchange of self-deception, irritation, and frustration that prevents genuine and beneficial interaction (Arbinger, 2015, 2016, 2018). Supervisors inside the box (that is to say, those who are unable to engage mindfully) place themselves at risk of causing emotional harm to both themselves and those they interact with. Supervisors within the box also risk contributing to an overall culture that fails to prioritize wellness and that, over time, may result in poor organizational output and chronic inefficiencies.

Transparency within the context of this chapter applies to the process by which mindfulness is brought to bear within an organization. Achieving transparency includes both clearly articulating intentions and speaking honestly, and with vulnerability, about the need for both the processes and the changes they are intended to enable. Supervisors seeking to change the culture within their organizations must be willing to share their own experiences, including sometimes painful ones, to establish context and common humanity with their employees. This may include, for example, disclosing challenges to personal confidence levels during the trials of the tenure process or steps taken to address and correct one's practice after receiving poor teaching reviews. It must be emphasized that this form of transparency does not call on supervisors to disclose past experiences which are unduly personal. Supervisors seeking to be transparent and vulnerable must always take steps to ensure they are not in any way burdening their

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employees with their own emotional or psychological baggage. Rather, this form of transparency urges supervisors to select moments of vulnerability that work in service to the employee and help them understand that employee's negative experiences are not indicative of lack of belonging or capability, or, worse, are somehow indicative that the employee is unsuitable for employment within higher education. In doing so, supervisors also implicitly invite their employees to be similarly transparent and vulnerable in recounting their own experiences and feelings, which in turn might reduce emotional harm and assist with overall retention of employees within the field.

It is also key that supervisors be transparent and explicit when articulating their goals associated with honoring and prioritizing employee emotional wellness. Enshrining emotional wellness within organizational values alongside other institutional priorities, for example, empowers employees to prioritize emotional wellness within their practice and enables all members of the organization to more productively question arising mandates and processes that appear to be at odds with the pre-existing organizational wellness value. The phrase "productively question" is important here, as it implicitly addresses the tension that sometimes exists between employee wellness priorities and organizational priorities. In formally honoring the emotional wellness needs of employees, organizations are not being asked to discount, reduce, or second-tier the traditional priorities of higher education institutions (scholarly output, the instruction of students, the attainment and completion of grant-funded research, community outreach, cultivation of the arts, etc.). Instead, they are being challenged to establish policies that allow both goals, which are in no way counterproductive, to be obtained simultaneously. Organizations that formalize their commitment to employee wellness enable employees who feel these values aren't being met to address their concerns transparently rather than pushing their complaints "underground." Disgruntled conversations pushed underground can all too easily become trapped in unseen negative feedback loops that permit ill will to fester longer. Sustained ill will may in turn result in intentional or unintentional work slowdowns, decreased morale, and potentially over time, poor worker health and increased illness-related absences.

Where supervisors are unable to enshrine pro-emotional wellness in formal organizational documentation, they can still prioritize emotional wellness, for themselves and their teams, within their philosophy of management. This philosophy should be articulated during both onboarding and regularly throughout normal employment. Supervisors who fail to articulate or otherwise live this value beyond the onboarding process place themselves at risk of being perceived by their employees as disingenuous. Additionally, supervisors promoting emotional wellness via their management philosophy should also have frank conversations with the appropriate human resources and/or organized labor representatives to ensure that their approaches to promoting wellness initiatives do not violate existing agreements and/or policies.

SOLUTIONS AND RECOMMENDATIONS

While numerous resources articulate various leadership philosophies that prioritize mindfulness and transparency (Brown, 2018; Eblin, 2014; Richards, 2016; Arbinger Institute, 2018, McClean, 2019; McKenzie, 2014; Hougaard, Carter, & Coutts, 2015)., there are very few resources that provide specific practical advice to leaders within the higher education context eager to leverage mindfulness and transparency within their organizations. Seeking to address this gap, the author conducted a call via multiple social media platforms to higher education employees of all types (including supervisors) to identify common pain points from their working lives that appeared to pit the emotional wellness of the

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individual against higher education cultural norms. These submissions were then anonymized, edited for length and clarity, and annotated with recommendations for supervisors facing similar concerns. The provided advice is drawn from both the literature and lived experience as a supervisor of both faculty and classified staff employed by academic libraries at both private and state institutions. It is hoped that this offering of practical advice may be useful to supervisors who may either be facing similar scenarios or developing their leadership philosophy. The author extends thanks to all individuals who responded to the call for submissions, only a portion of which have been reproduced here:

We are salaried and expected to work 40 hours per week, but the exact hours of that schedule tend to vary. Because we are not hourly, we do not get paid overtime. There is an unofficial flex time system, but the organization will not define it precisely. When we push for definition, we are first reminded that we do not have 9 to 5 jobs and are then warned that we shouldn't rock the boat. The implication is that in asking for clarity we will risk losing the flexibility we technically have due to a lack of actual policies.

It is not atypical for higher education organizations to claim that faculty roles, or indeed any form of salaried employment, is not a 9 to 5 job. Generally, this statement is meant to indicate that start and stop times are less rigidly defined than those of their hourly counterparts, and that on occasions when they must engage in overtime, they will not be financially compensated. However, the phrase that salaried employment is not a 9 to 5 job is problematic on several levels and should perhaps best be retired from common parlance. The unfortunate reality is that this phrase is generally loaded with an unspoken scorn for those who do engage in more structured hourly employment. Use of this phrase can induce antipathy between salaried and hourly (usually classified) employees, as it often reflects other inequalities, such as compensation, nature of assigned duties, vacation and sick day allowances, schedule flexibility, and perceived status. Tensions between classified and academic faculty are common, due in part to a predominant culture that places a premium on credentials and does not always equally value lived experience. Supervisors should seek to reduce these tensions and avoid language, however commonly used, that may further entrench such feelings.

Another weakness of the not a 9 to 5 job assertion is that it is vague and lacks transparency, which may lead employees to mistakenly believe there are minimal or indeed no limits on the amount of time an organization can demand of them. This misconception can, in turn, erode employee trust in the organization and negatively impact their ability to distinguish their work/life balance and differentials. Organizations where employees are actively being discouraged from seeking transparency, open themselves to accusations of manipulation and mistreatment. While fully articulating policies is time-consuming and onerous, doing so enhances transparency, which can increase organizational trust.

Supervisors should take a proactive role in trying to clarify and communicate uncertain policies, rather than waiting for employees to discover and report uncertainty. In situations wherein the supervisor cannot clarify the situation, the supervisor should forward the inquiry to the correct department or individual, and then keep active tabs on the matter as it moves towards resolution. Updates should be provided regularly to employees, even when there is no resolution yet to be had, to help signal that the matter is both of importance and has not been forgotten.

We are understaffed and have been for years due to budget cuts. Despite this, we are constantly encouraged to add more services we cannot support. The more services we add, the more burnout we experience. Now we do lots of things badly and the new services just keep coming.

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Mission creep and decreasing budget expenditures have impacted most, if not all, institutions of higher education (Gonzales, 2012; Gonzales, 2013). The combination of these forces encourages organizations to adopt a do more with less philosophy, which invariably becomes draining over time for even the most vigorous and energetic employee. While most supervisors are not in roles that will permit them to reorganize budget priorities to the benefit of their units, they are in positions that provide some latitude when ordering priorities. Frank conversations may be needed between supervisors and teams, supervisors and individuals, and/or supervisors and administration to identify which current services are still needed, which emerging services are genuinely a priority, and which services may need to be reconfigured or reassigned to avoid overcapacity scenarios.

In many instances, letting go of old duties or services may be more difficult for some employees than taking on new ones. Supervisors should be mindful that when they ask an employee to set aside an old service in favor of a new one, they are ultimately asking employees to step away from an arena in which they have obtained mastery and into one where their skillset may not yet be developed. This process can be intimidating, even frightening, for individuals and empathy on the part of the supervisor is necessary. It may be valuable for supervisors to reflect on their own past experiences of transitioning from expert to novice over throughout their career so that they can remind themselves that such transitions can be anxiety-producing, particularly in the workplace where growth feels more visible and open to judgement and comparison by colleagues, employers, and direct reports. These transitions can be made easier by clearly articulating expectations, including a timeline of increasing competency and providing the level of training actually needed by each employee, rather than the level of training the supervisor imagines they would personally require. Throughout both the prioritization process and the training process, supervisors must make themselves available to receive feedback and avoid accusations of enacting Blanchard & Johnson's seagull management paradigm, in which "managers fly in, make a lot of noise, dump on everyone, then fly out" (pp. 38).

One of the most frustrating things about my organization is the misinformation about tenure. The bylaws are fairly clear, but senior faculty regularly suggest that the bylaws are just guidelines. People also like to talk about their own tenure process "battle scars," then become frustrated when pre-tenure faculty suggest the process might be inhumane and in need of reform.

The tenure process is nearly universally stressful for those who undergo it. The process necessitates review by peers, often in a public or semi-public forum, and is tied in most cases to an ability to retain employment in their current position. With few exceptions, this uncertainty regarding ongoing employment can result in periods of anxiety and stress, sometimes to extreme degrees. It may also have a significant impact on the mental and/or emotional health of candidates (Ball, 2014). Supervisors have an obligation to both discuss fears and cultivate a culture wherein stories of past candidates who underwent extreme stress as a part of the tenure process are not lionized. For example, supervisors might wish to not share the story of a past colleague who spent every weekend for six months preparing their tenure packet and instead work with candidates to establish a unique timeline for their packet process that enables the candidate to both meet tenure requirements and create space to engage in activities that hold personal value for them.

Supervisors are also responsible for modeling behaviors that acknowledge the seriousness of tenure, but which also seek to avoid making the experience seem harrowing. Supervisors benefit from being transparent about this modeling and should consult with senior faculty members to develop approaches

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and strategies that have the potential to make the process less overwhelming for junior colleagues. Where necessary, supervisors may need to speak to individuals who are not being mindful about the effects of their comments on candidates and coach them to be more empathetic and thoughtful about how they share their insights into the tenure process. While not every candidate may achieve tenure, candidates should not be subject to departmental cultures that communicate they are doomed from the start.

It should also be noted that tenure processes that serve solely as guidelines ought to be subject to review. Tenure processes that are uncertain, excessively vague, or otherwise produce reasonable doubt about the legitimacy of the process itself are highly problematic for both the organization and those candidates who are subject to them. The decision to be specific to the point of prescription is, of course, up to individual organizations and their faculties. However, it might be wise if organizations and faculties establishing their tenure process give serious consideration to the cost/benefit ratio of establishing policies that, though flexible, retain the capacity to harm the emotional health of colleagues by their unpredictability.

I am one of the only POC (Person of Color) faculty at my institution. When I tell my white supervisor about the microaggressions I experience, they usually try and explain how I misunderstood or am reading something unintended into the situation. This happens everywhere in PWIs (Primarily White Institutions).

The term microaggressions refers to indirect, subtle, or unintentional incidents of discrimination leveraged against members of a marginalized group. Initially coined by psychiatrist Dr. Chester M. Pierce in the 1970s, the concept has been radically expanded upon in recent decades to include classifications of types of microaggressions such as microassaults, microinsults, and microinvalidations (DeAngelis, 2009). Additional study has further defined common thematic trends, including the assumption of foreign-born status, the ascription of intelligence, white assertions of color blindness, assumption of inherent criminality, white denial of individual racism, the prevalent myth of meritocracy, pathologizing cultural values, endemic white preferential treatment, systematic environmental microaggressions, and common turns of phrase predicated on devaluing a marginalized social group (Sue, Capodilupo, Torino, Bucceri, Holder, Nadal, & Esquilin, 2007). Microaggressions can have a significant impact on the mental health of those exposed to them, radically increasing rates of depression, self-doubt, poor self-esteem, suicidal ideation, and a myriad of symptoms associated with post-traumatic stress disorder (Torres & Taknint, 2015; O'Keefe, Wingate, Cole, Hollingsworth, & Tucker, 2014; Robers & Molock, 2013; Nadal, 2018). The impact and endemic nature of microaggressions within higher education is well-documented (Johnson & Joseph-Salisbury, 2018; Young, Anderson, & Stewart, 2015) and continues to remain prevalent; even in collecting sample scenarios for this chapter, scenarios detailing microaggressions leveraged against ethnic minorities occurred three times as often as scenarios associated with any other theme or topic.

All supervisors, but in particular those who are white, are obligated to educate themselves about how whiteness holds social and institutional power and the impact that power has on nonwhite people. This can be a new and challenging perspective for those who have not historically had to assess how they benefit from their unasked-for association with dominant power structures. As Robin DiAngelo notes in *White Fragility: Why It's So Hard for White People to Talk About Racism*:

White people in North America live in a society that is deeply separate and unequal by race, and white people are the beneficiaries of that separation and inequality. As a result, we are insulated from racial stress, at the same time that we come to feel entitled to and deserving of our advantage. Given how

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seldom we experience racial discomfort in a society we dominate, we haven't had to build our racial stamina. Socialized into a deeply internalized sense of superiority that we either are unaware of or can never admit to ourselves, we become highly fragile in conversations about race. We consider a challenge to our racial worldviews as a challenge to our very identities as good, moral people. Thus, we perceive any attempt to connect us to the system of racism as an unsettling and unfair moral offense. The smallest amount of racial stress is intolerable--the mere suggestion that being white has meaning often triggers a range of defensive responses. These include emotions such as anger, fear, and guilt and behaviors such as argumentation, silence, and withdrawal from the stress-inducing situation. These responses work to reinstate white equilibrium, as they repel the challenge, return our racial comfort, and maintain our dominance within the racial hierarchy (1-2).

This means white supervisors (or those who hold other dominant identities) must take care to not respond with fragility when employees share their experiences of microaggressions. Responding with fragility can double the negative impact of the event and further degrade the sense of safety and comfort within the workplace environment.

In addition to rigorous self-education, supervisors must also familiarize themselves with the resources available at their institution for individuals who are experiencing microaggressions. The full extent of resources available depends on the institution. Still, common resources include Human Resources, the Office of Diversity, campus Social Justice centers, the Office of the Ombudsman, and employee affinity groups oriented around gender, sexuality, ethnicity, religion, etc. It should be noted that while knowledge of these services and their contact information is necessary, this does not mean that all reports of microaggressions should be immediately referred onwards. How individual employees wish to address a microaggression, if they wish to address it at all, should, broadly speaking, be left up to the employee to determine. Supervisors should serve as supportive sounding boards with an understanding of optional additional resources, rather than automatic pipelines to official investigative or corrective processes.

Supervisors can also seek to reduce the overall frequency of microaggressions by prioritizing cultural humility and bystander training for all employees and articulating values associated with diversity in departmental and organizational guidelines. In addition to hopefully providing individuals with insights and skills to identify and confront bias within both their own behavior and the behavior of others, enshrining these values in the organizational culture itself helps accurately reflect that improving the capacity for emotional wellness and developing a humane workplace is work that all employees are responsible for. Asserting common responsibility for this endeavor reduces assumptions that education related to diversity is the work of marginalized people and reduces the likelihood of associating support services offered by employee affinity groups with deficit thinking models.

I work in Human Resources and the thing that never fails to amaze me is how little people know about the Family and Medical Leave Act. Usually by the time I am alerted of a situation an employee has completely run themselves down trying to maintain their usual work requirements while simultaneously taking care of a critically ill family member, managing their own mental health issues, trying to schedule surgery on a three-day weekend so they are not off work, etc. I do not know why staff do not ask first, rather than use HR as a last resort.

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During the course of their full career, most employees will, at some point, experience a situation that qualifies for extended leave under the guidelines associated with the Family and Medical Leave Act (FMLA). While events qualifying for FMLA leave can be joyous, such as the birth, fostering, or adoption of a child, quite often, FMLA is requested during events that can be both stressful and harmful to emotional health. Because Human Resource professionals are rarely in direct and constant contact with most/all employees, immediate supervisors must be aware of FMLA policies and how they can be leveraged. Familiarity with these policies enables immediate supervisor to assist employees undergoing crisis and accurately refer employees.

Supervisors who prioritize and speak both openly and transparently about the value of maintaining emotional wellness may reduce the likelihood that employees will seek support from Human Resources only as a last resort. Other techniques to stave off the last resort mentality include providing documentation related to emotional resources in a prominent place, discussing emotional wellness services available to employees during onboarding, and keeping the topics of both emotional wellness and available services in the common organizational discourse. Supervisors seeking to establish humane and emotionally healthy workplaces can also collaborate directly with Human Resources professionals to ensure they are providing consistent and accurate information regarding available resources, as well as clearly advertising where these resources are. It is not uncommon for organizations to offer plentiful resources and policy summaries that are simply not easily found by employees.

FUTURE RESEARCH DIRECTIONS

Future research directions regarding the role of the supervisor in creating and maintaining a humane and emotionally healthy workplace are robust and multifaceted. While this chapter contains suggestions regarding possible approaches to help develop and support healthy workplaces in the context of some common scenarios, more significant longitudinal studies are required. Additional scholarship is also needed in assessing the ways in which organizations have successfully added employee wellness to formal organizational values within the higher education context or within a corporate context with distinct recommendations on how such processes can be duplicated within the higher education context. Research on the efficacy of supervisor training in the "soft skills" necessary within a mindful and wellness-focused workplace is critically needed. This research should be paired with recommendations on how organizations can develop and deliver such training in-house so as to reduce the risk of paywall barriers that may otherwise disadvantage both supervisors and employees at institutions with limited funding.

Additional research is necessary within the broader area of the emotional wellness of higher education practitioners in the workplace writ large. While this literature does exist to some extent (Watts, J. & Robertson, N., 2011), it is unevenly applied across both disciplinary and functional capacities. Particularly short-changed are non-academic employees who, while not subject to the additional pressures and job uncertainty associated with the promotion and tenure process, may nonetheless benefit from the establishment of more humane and supportive workplaces. In researching the wide-ranging field of emotional wellness within higher education, special attention must also be paid to the emotional wellness of both higher education practitioners whose personal identities correspond with one or more historically marginalized groups and higher education practitioners who identify as first-generation college graduates. Members within the first group are often required to engage concurrently with the standard trials of higher education employment and the racism, white supremacy, classism, and bigotry

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inherent to systems that were either were made without them in mind or that have historically sought to actively exclude them. This can result in additional emotional burdens that may negatively impact some individuals and additional research is needed to ensure that approaches to enhancing emotional wellness in the higher education workplace include resources and efforts of value to all workplace community members. Members within the second group, those who identify as first-generation college graduates, face additional barriers associated with hidden curriculum present within the workplace (Margolis, 2001). The presence of hidden curricula and the knowledge gaps they expose may result in enhanced but mistaken beliefs that some individuals are incompatible with higher education as a professional field of practice. Future research in this area must be inclusive and avoid the pitfalls of developing models that only or primarily suit members of the dominant culture and identity groups or communities that have an unspoken advantage when navigating invisible systems.

CONCLUSION

As the industry of higher education continues to make changes that better prioritizes the emotional wellness of employees and, in general, establish a culture that is broadly more humane than the culture currently in place, it must do so with the understanding that such improvements are not solely the work of individuals. Unlike scholarship, which often is the result of a single individual researching and publishing in an area of personal academic interest, cultivating environments wherein emotional wellness is encouraged is a collaborative effort. Miscasting this work as solely the responsibility of the individual whose wellness has been negatively impacted is wrongheaded. Further, it can be dangerous, as this model only further perpetuates the perceptions of isolation and fit that can make higher education employment so problematic. This does not mean that individuals are no longer responsible for making choices that benefit rather than harm their emotional health, or that supervisors are being positioned in such a way that assigns them the bulk of the responsibility for establishing healthy workplace cultures. Rather, the author asserts that individual workers and supervisors must work together in concert to enable wellness-enhancing behaviors and advocate aggressively for the establishment of formal pro-wellness policies within their workplaces. Additionally, the author calls for further research and contributions that outline practical approaches to achieving this goal, as well as those who articulate a broad theoretical overview.

The recommendations found in this chapter are intended to serve only as a start towards developing a multi-voiced collaborative repository of common pain points within higher education as it applies to emotional wellness and, with them, a selection of behaviors, responses, and practices which may address them. Over time, this collection of recommendations can be refined and enhanced, then adapted to meet the needs and preferences of individual supervisory practitioners. Continual reflection on such processes, both successes and failures, in combination with ongoing scholarship can assist, the author hopes, in establishing a culture of higher education wherein employees and supervisors work together in ways that take heed of and honor both emotional and intellectual needs within the workplace.

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KEY TERMS AND DEFINITIONS

Coercive Power: The power that enables a supervisor to force an employee to comply with orders or to enact punishment if compliance is not given.

Connection Power: Power derived by influence on, favor from, or acquaintance with a powerful person.

Cultural Norms: The actions and behaviors which are tolerated and/or deemed acceptable, informally or formally, by the majority of members within a given subgroup of people.

Expert Power: Power derived from the perception of others that one possesses superior skills, knowledge, or experience.

Informational Power: Power derived by possessing needed or wanted information.

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Mindfulness: A mental state and philosophical practice that prioritizes calm observation of the present moment and non-judgmental acceptance of emotional, intellectual, and physical responses to what is observed.

Organizational Culture: The structure of formal and informal priorities, values, and behavioral expectations in a given workplace environment.

Reward Power: The power of a supervisor to give some form of reward, tangible or intangible, in recognition of service, effort, or achievement.

Titular Power: Power derived from placement within an organizational hierarchy. Generally, this model provides individuals in higher positions with control over those in lower positions within the same organization. This power is sometimes referred to as Position Power.

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Chapter 85
Engaging Employees With Positivity:
The Role of Appreciative Inquiry in Employee Sustainability

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ABSTRACT

This chapter attempts to find the role of appreciative inquiry in employee engagement and organizational transformation. An attempt has been made to explain the impact of appreciative inquiry on employee engagement, which eventually helps in organizational transformation with minimal hindrances. Employee engagement has turned into an undeniably conspicuous issue in the region of organizational development (OD) likely because of the developing collection of research encompassing the positive connection between employee engagement and organizational development, which also comprises profit margin. Appreciative inquiry is a vision-based approach of open dialogue that is designed to help organizations and their partners create a shared vision for the future and a mission to operate in the present. The main thrust area of appreciative inquiry is to find out what works best for the organization. Instead of focusing on negativity, appreciative inquiry focuses on the positive aspect of the organization.

INTRODUCTION

In recent years, employee engagement has become a very popular topic of discussion. Worldwide, many organizations have felt the need of increasing the percentage of engaged employees and they are taking steps to do so. Google, for example believes in nurturing a transparent culture in their organization in order to ensure engagement among the employees. Transparency ensures empowerment employees as well as creativity and collaboration among employees (Flintand Hearn, 2019). It is believed that by empowering employees, engagement can be achieved. In many organizations, employees are treated as partners. Since the employees are treated as partners, they take part in decision making in the orga-

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nizations.(Flint and Hearn, 2019). This is one of the best practices in Google Inc. Full contact, on the other hand provides paid vacation to their employees in order to encourage engagement. They inspire the employees to go on a vacation funded by the organization, but on one condition that they cannot receive any official message or call. These paid vacations will reduce the dependence on any particular employee and at the same time will lead to belief in the efficiency of the coworkers.(Maier,2016).In Virgin, it is believed that to flourish in any business, one has to build an environment where employees will love to work and feel at home.(Flint and Hearn, 2019)But why has employee engagement become a much discussed topic these days? This is because employee engagement reaps many benefits for the organization. Employee engagement leads to enhanced employee performance, reduced absenteeism, job involvement, and many more. Among the many benefits of employee engagement, employee sustainability is one of the important benefits. Employee engagement helps the employees to go beyond just earning a livelihood. Nowadays, employees are not only happy with a handsome salary. They want to be a part and parcel of the organization. Employee engagement helps to balance personal life and work life. It gives them opportunity for learning and develops passion towards work. Employee engagement develops creativity among the employees, helps them to be innovative and in the process, enables the organization to achieve competitive advantage. It also leads to job satisfaction and lower rate of attrition and increased employee sustainability.

To make employees more engaged at work, it is important that the organizations know the strengths of its employees and helps to nurture them. Best productivity can come from instances where employees are able to deliver their potential. From this perspective, one of the organizational development practices that delve into the understanding and exploring the best potentials of the individuals at work and organizations at a whole is Appreciative Inquiry (hereafter AI). In one study it was found that, in two cases, innovative ideas got established and polished through the exceptional contribution of individuals from various backgrounds under appreciative inquiry (Richer, M. C., Ritchie, J., &Marchionni, C. (2009).. The heart of any organizational democracy is talking, exploring, initiating dialogue and inquiry; through this organizational members are engaged in defining better results for their firms.

Some of the building blocks of employee engagement, as research suggests, are as follows:

- **Building High Level of Trust:** The power of trust is often undermined by the leaders of an organization. But, if trust can be built up, it can reap many rewards-engaged employees, retention of top talent, positive work culture, etc. Following are examples of behaviours that can lead to building trust:
  i. Clarity in working of the company
  ii. Prompt dissemination of information
  iii. Giving impartial attention to each and every employee
  iv. Acceptance of failure
  v. Uniform communication
  vi. Uniform practices
  vii. Realistic commitment
  viii. No fault finding
- **Treating Employees Well:** Understanding the employees' actual needs and respecting those needs is crucial for developing engagement. Giving due respect to the employees helps to boost up the morale of the employees which in turn leads to higher level of engagement.

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- **Deliver Promises:** A company's ability to fulfill its promises governs the integrity and truthfulness of the company. If a company can deliver the promises it has made to the employees, it will be able to fulfill the promises made to the customers also.
- **Envision:** It is not only enough to put down in statement a well thought and well explained vision of a founder. In order to realize the vision, it is essential that it is communicated to each and every employee of the organization. Vision should be inculcated within each and every individual.
- **Opportunity for Career Growth:** Most employee engagement surveys put 'career development opportunities' as one of the top most priorities in the minds of most employees. According to research findings of Blessing White when there is clarity in the definition of career success to an individual, it increases both job satisfaction and performance in their present job. It also enables lateral movement of the employees.
- **Design Meaningful Jobs:** Employee engagement can be ensured if both job enlargement and job enrichment is ensured at workplace. This brings variety in jobs as a result of which boredom in workplace reduces. Designing meaningful jobs also bring about creativity among the employees. The result is increased productivity and higher level of commitment among the employees.
- **Breathing Offices, Safe Workplaces:** The 'Generation and Workplace Annual Report' by Johnson Controls in the year 2010 clearly shows a relationship between nature of workplace and employee engagement. Nowadays ergonomically designed workplace is being stressed upon. Ergonomically designed workplace will take into consideration the physical as well as the social environment of the worker. Safer, breathing and ergonomically designed workplace contributes to higher employee engagement and higher productivity. An employee gets emotionally attached to the workplace which helps to boost up the morale of the employees.
- **Collaborate and Involve:** In this world of globalization, employees are spread all over the world. Therefore the need of the hour is collaboration among the widely spread work teams. At the same time, employees should be involved in important activities of the organization. This develops a sense of belongingness and importance among the people. It also enables the employees to use their creative skills at workplace. Both collaboration and participation leads to higher level of engagement.
- **Employee Empowerment:** Empowerment means instilling a sense of ownership among the employees. Empowered employees' takes part in decision making and planning process and the employees are motivated to do what they are best at. Global engagement study by Blessing White has showed empowerment as one of the top prime concern among the workers. Empowerment satisfies the esteem needs of the employees. Workers feel valued in the organization. When the workers perceive themselves as valuable, they will feel passionate about their work. This is turn results in higher level of engagement among workers.
- **Encourage Informal Networking:** Informal network helps in relationship building among the employees. It also develops trust among the employees which results in information and knowledge sharing amongst them. It also helps the organization to identify the negative vibes that may have developed within the organization.
- **Communication:** Communication is an important contributing factor to engagement. One of the ways to ensure engagement is to align the goals of the organization with that of personal goals. This can be ensured through effective communication. Organizational objectives and goals should be clearly communicated to each and every employee. Employees must be communicated about where the organization is headed for. Thus, communication plays a very important role in employ-

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ee engagement. In addition, as mentioned earlier, nowadays due to globalization, work teams are spread all over the world. Therefore, developing new and improved methods of communication has become very essential for succeeding in any venture. Thus, communication and engagement is closely linked. (Sengupta,Ramadoss,2012,p.32-51)

EMPLOYEE ENGAGEMENT IN ORGANIZATION

Employee engagement has received considerable attention worldwide. It is being implemented by various companies. American Express for example concentrates on behaviour as measure to engage employees. The company has seen that engagement increases where the behaviour of the employer towards their employees has been on an emotional level. Therefore, American Express since long time has not only given importance to the result but also on how the results have been achieved. (Flint and Hearn, 2019)

Hyatt's employee turnover is very low in contrast to the trend in hotel industry. This is because Hyatt emphasizes on employee development. The emphasis on representative advancement and advancing from inside has a huge impact in this. Another intriguing practice, associated with improvement, is the manner by which they engage their representatives (whom they call partners), to listen cautiously to one another and visitors, to have the option to take care of issues and make new arrangements, instead of following contents of what to do, making the visitor feel unique and heard. (Flint and Hearn, 2019)

Companies that have given importance to employee development have motivated the inner self of the employees which is very much essential in this changing world. Motivation of the inner self helps the employees to welcome change and thereby helps in organizational development.

Wipro operates its employee engagement programs at all level-individual level, unit level and at organizational level. According to Wipro Sustainability Report (2015-2016), the key organizational modifications and announcements are cascaded by emails, internet messages, posters, kiosks, on-floor meetings and through company and human resources teams. Throughout the year, the management team engages with staff through online chat sessions, leader blogs,' Wipro Meets, at organizational level,' All Hands Meets ' at company unit level, round table conversations and functional evaluation meetings and offsets are organized. Another significant opportunity for engagement is to satisfy staff through one-to-one conference and team conversations through business managers and HR teams. In addition, company units use tailored engagement frameworks to satisfy employee-specific requirements in that unit or business or domain.

Wipro has created a broad social platform for enterprises to guarantee connectivity among geographically extensive staff and to allow them to work on cooperative projects without any time limitations or placement. They also allowed employees to provide real-time feedback to interact directly with senior authorities or functional teams through internet surveys.

TCS has an average employee engagement score globally at 73%. The engagement score of TCS in Asia Pacific region increased from 73.9% between 2012 and 2013 to 74.8% between 2013 and 2014. There is a prevalent understanding in TCS of Australia and New Zealand that engagement is characterized as the connection among people and the workforce where the workforce contains co-workers/team members and superiors. TCS has not given a consolidated definition of engagement. It depends on the verifiable understanding of the connection among employees and workforce. The definitions are subsequently remarkable to TCS and can't be embraced nor deciphered by other outer associations. Communication of employee engagement takes place at two levels in TCS of New Zealand and Australia. Pulse Survey

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conducted by TCS leadership team all over the world communicate the Employee Engagement score from the organizational level to the individual level through intranet and key note speech by the CEO. On the other hand, there is indirect communication of the definition and strategy of employee engagement by the employees and the human resource professionals with the help of programmes like Maitree, Transformers and alike (Boanca,2014).

Reliance Industries Ltd (RIL) has developed with a one of a kind activity to connect with their workers called, "R-VOICE". It is a radio engagement program for the representatives to impart their insights, propose and see the accepted procedures inside the association. This activity will be a stage to comprehend the workers' better, sort out the hazy areas, get a reasonable picture about their idea and feeling about the current authoritative practices. In the present month, "Supervisor Best Practices" topic is going through R-Voice, where the workers can tune in and become familiar with the accepted procedures embraced by a portion of the chiefs over the association.

Reliance Industries Ltd (RIL) has evolved with a noteworthy initiative to have interaction with their workers referred to as, "R-VOICE". It is a radio engagement program for the representatives to impart their insights, propose and see the accepted procedures inside the association. This activity will be a stage to comprehend the employees' better, sort out the grey areas, get a reasonable picture about their idea and feeling about the current authoritative practices. Because of this initiative Reliance has been branded as "Listening Organization".

Companies like Infosys, Accenture and Flipkart have taken inspiration from Reliance and have started their own radio engagement program. This remarkable activity draws in, persuades and connects with employees resulting in lower attrition rate on account of the significant experiences the employees get from over all degrees of association. The mode of radio in employee engagement is infotainment approach to engage the employees through music and in the process enables the employees to subsume the messages and that is the reason it has demonstrated a significantly more successful correspondence mode than emails, pamphlets or posters.

APPRECIATIVE INQUIRY AS A METHOD OF ORGANIZATIONAL DEVELOPMENT

To an appreciable degree, emotions play a crucial role during a change process in an organization. Emotions impact change regardless whether the impact is a favorable one or an unfavorable one. Change generates a feeling of uncertainly, insecurity and threat to their existence in the organization. Radical authoritative change could in this manner be an extremely emotive occasion. The more diverse changes happen, the more negative feelings, for example, disappointment and tension will be experienced. In the event that the emotional involvement in the change procedures is conventionalized as unreasonable or unjustifiable, the change procedure could be difficult and cause solid obstruction. Organizations carry out the mediations during the change procedure with enormous hindrances, when the effect of feelings has been thought little of. Pioneers should carry out the mediations by giving due importance to emotions during the change process. One of the best mediations in this regard is Appreciative Inquiry (AI).

In this changing world, business leaders and managers are continuously faced with various types of challenges. Among the various change management strategies that the leaders adopt, Appreciative Inquiry is a modern one. It is tailored to the needs of the organization. It is a comprehensive tool of change management which empowers organization to engage and motivate diversified and scattered workforce. It also enables the customers and stakeholders to participate in the future of the business.

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Appreciative Inquiry also enables the organization to identify their strengths and areas of competitive advantage and expand the same (Whitney and Cooperrider, 2011). Appreciative inquiry suggests that instead of finding faults in employees or what is not working properly in an organization, it is better to focus on the good, the better and best actions that is often not discoverable; if this is done, it will help in organizational development. Appreciative inquiry is a philosophy that stresses coordinated effort and investment of all voices instead of a single voice.

Appreciative inquiry is done to best understand organizational members' values and the peak moments/experiences of what has worked well in the past. The inquiry also includes questions about the core factor that gives life to the organizations' continued existence and wishes for the future. Its internal focus is on strengths.

Appreciative inquiry refers to a process of knowing that draws one to inquire beyond superficial appearances to the deeper life enhancing essentials and potentials of organizational existence.

The fundamental proposition of Appreciative Inquiry can be compared with a glass half filled with water. There are two ways in which an organization can view this half-filled glass of water. If the organization views it as half empty, then it is likely that the organization will be more interested in fault finding activity. They will be more interested to find out what is not working well and who is responsible for the fault. On the other hand if the organization views the glass as half-filled with water, then it can be said that the organization has a positive outlook. They will make an attempt to find out what is working best in the organization and try to enhance it. (Stevenson, 2007)

It is used as a co-inquiry from multiple perspectives to understand organizational effort to create a vision, serve its mission, obtain desired goals and objectives and design the best strategies.

Appreciative inquiry plays critical roles in the strategic planning process. It provides a framework for the organization to compete as strategic assessment, and it emphasizes a collaborative process of open dialogue to help the organization stakeholders to understand what they see happening when the organization is working at its best. As the stakeholders identify and describe the "life giving" forces of the organization, together they can imagine and impart innovation to the future of their organization with energy, vitality and commitment. The positive language and affirmation should fit with the value system of the organization. In addition, the process can be a helpful approach in any strategic planning effort because it requires a strategic vision, collective action, multiple parties and an empowering context for innovation and development.

The change process through Appreciative Inquiry can be described through the Five-D Phase Cycle. The five phases are as follows:

- **Define (Setting the Stage):** Selection of the area of study and investigation is the most crucial aspect in this stage. A key idea of AI is that some positive aspect of the organization will be selected as the focal point of the inquiry. This positivity will help to construct the questions for the second phase i.e. Discovery.
- **Discovery:** In this phase interview questions are framed to find out what works best for the organization. The questions can be related to technology that enables the employees to work without any hindrances or may be any other positive issues. The interview is generally conducted in groups. Members in a group interact with each other to share their positive experiences as well as they share what helps them to remain positive in the organization. Post interview they analyze what resources and facilities have helped the members to achieve success in past.

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- **Dream:** Information collected from the previous phase will help them to design their future course of action. The dream may be expression in written form or in some other way such as posters, drama, songs, etc.
- **Design:** Once the dream has been designed, the members have to decide upon the infrastructural facilities and management systems required giving shape to the dreams.
- **Deliver:** In this phase real time plans are chalked out and the responsibilities are assigned to groups and sub groups to make the plan successful. (Stavros, Jacqueline & Godwin, Lindsey & Cooperrider, David, 2016)

APPRECIATIVE INQUIRY AND EMPLOYEE ENGAGEMENT

Appreciative Inquiry has been variously found to be associated. Various workshops, summits and intervention programmes have found the same. In certain experimental situations as well as research platforms, it was attempted to understand if AI would impact employee engagement. When AI was adopted as an OD tool, the diverse phases of AI allowed exchange and alteration of knowledge into groundbreaking ideas, supporting the premises of the theoretical framework (Richer, Ritchie &Marchionni (2009). When engaged in instituted workshops on AI, it was found that participants enjoyed having a 'voice' at a time when they felt comparatively ineffective in a context where decisions were being made only by their higher level managers (Doggett & Lewis, 2013, Chakraborty, Gupta, & Chatterjee, 2018). In another study it was found that AI demonstrated advanced levels of group identification (Peelle III, 2006).Authors suggested that because of an AI approach at work, creativity, ownership, and accountability increased and that the AI Virtual Summit that they conducted, resulted in many positive consequences (Conkright, 2011). Through appreciation and engagement, the interventions related to appreciative inquiry enabled positive supportive actions towards a new future, that holds the capacity to build and broaden organizational outcomes (Cooperrider & Godwin, 2011). Other researches have also pointed out the connection between AI and work engagement. AI provides adequate resources stimulating personal development and knowledge and development opportunities as a path to increased employee engagement. Culture of employee engagement can be built, and it should be paved through the tenacious efforts of managers and leaders in the organization. Positive work environment leads to positive outcome of performance (Chakraborty & Ganguly, 2019). Appreciative inquiry process practiced at an individual and organizational level, leads to self-motivation, learning and open attitude, enabling self, openness, inquisitiveness for searching strengths and success, optimism and creativity. (Chakraborty & Mishra, 2019).

BENEFITS OF APPRECIATIVE INQUIRY

Appreciative Inquiry is a vision based approach of open dialogue that is designed to help organizations and their partners create a shared vision for the future and a mission to operate in the present. Today's organization can benefit from an appreciative approach of inquiry which invites organizational members to learn and value the history of their organization and its culture. The Appreciative Inquiry approach allows them to:

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- Build on their strengths
- Discover profitable opportunities
- Visualize goals and strategic alternatives
- Identify enabling objectives
- Design strategies and tactics that are integrated with their most successful programs and supply chain partners
- Implement a strategic plan that is a dynamic, continuous and living document

ORGANIZATIONAL DEVELOPMENT THROUGH EMPLOYEE ENGAGEMENT

Employee engagement has turned into an undeniably conspicuous issue in the region of Organizational Development (OD) likely because of the developing collection of research encompassing the positive connection between employee engagement and organizational development which comprises profit margin also. Organizational Development professionals, both internal and external, are being increasingly requested by the top brass of the organization to suggest strategies for increasing the level of engagement of the employees. Several OD techniques are available to increase and retain the engagement level, but research has shown none of the techniques to be fruitful. In the past, organizations have tried to increase the level of Employee Engagement through problem solving approach, i.e. to identify the problem first and then devising strategies to solve the problem. But in spite of these change management strategies have undergone a change in recent years as research suggests. Organizational practitioners are no more dependent on traditional methods of change management where the process would begin by identifying the problem areas and then proceeding to solve it. Nowadays, OD specialists rely more on stressing the important on the strength of the organization in order to enable change process. One of these strategies is Appreciative Inquiry which helps to improve the engagement level of the employees.

PRESENT SCENARIO OF EMPLOYEE ENGAGEMENT

Employee engagement has positive impact on the performance of the organization in many areas. Jessen (2014) have researched that highly engaged employees were 87% less likely to quit their job than the disengaged employees. 75% of the employees who quit their job actually quit their bosses (Jessen, 2014). Autry (2019) asserts that 2% of employees are of the opinion that learning and development is the most important deciding factor while selecting a job. Most of the employers think (89%) that employees leave their job because of more money and other benefits. But, the reality is, as research shows, that only 12% of employees leave job due to more money(Jessen, 2014).67% of millennia's are likely to quit their jobs if their present company does not provide them growth and leadership opportunities(Autry, 2019). 2006 ISR survey of 664,000 employees all over the world have shown that higher level of employee engagement actually improved financial outcomes of organizations in terms of operating income, net income and earnings per share. Engaged workers were more likely to exhibit discretionary efforts and improve individual performance (Sengupta and Ramadoss, 2012).

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Table 1. Towers Perrin Global Workforce Survey, 2005

Area*/Country	Highly Engaged	Moderately Engaged	Disengaged
Global*	14	62	24
Mexico	40	51	9
Brazil	31	62	7
United States	21	63	16
Belgium	18	67	15
Canada	17	66	17
Germany	15	70	15
Ireland	15	70	15
UK	12	65	23
Spain	11	64	25
South Korea	9	71	20
France	9	68	23
Netherlands	8	73	19
China	8	67	25
Italy	7	64	29
India	7	37	56
Japan	2	57	41

Source: Reprinted from Employee Engagement by Sengupta and S.Ramadoss by Biztantra Publishers

EMPLOYEE ENGAGEMENT THROUGH APPRECIATIVE INQUIRY

A highly engaged employee will reliably beat and set new norms. In the workplace research on employee engagement have time and again asked employees whether they have the chance to do what they excel at consistently. Just about 20% of the workers have answered in assertion. Anyway the individuals who have done that have additionally scored considerably high on execution. It is in this scenario that Appreciative Inquiry comes into play. The main thrust area of appreciative inquiry is to find out what works best for the organization. Instead of focusing on negativity, appreciative inquiry focuses on the positive aspect of the organization. Thus, implementation of appreciative inquiry will help the employees to excel at what they are proficient at.

Implementing appreciative inquiry requires a cultural change in the organization. It should be made applicable for all categories of employees irrespective of their position, gender, age etc. Appreciative inquiry alone cannot bring about any change. Learning and leadership has to work hand in hand with AI to make any change successful. It has been seen that many change efforts have failed because it has fallen into the deaf ears of the leaders. Also, change cannot be brought about in one day. It is a continuous process. As mentioned earlier, it has to be embedded into the day to day practices of the organization. An efficient feedback system should be in place so that any loopholes can be immediately corrected

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Table 2. Appreciative inquiry initiatives

Organization	AI Initiative/Award
Avon-Mexico	To address the issue of gender equity and a pilot project for Avon globally. Catalyst award for Best Place to Work in the Country for Women 1997
British Airways North America	To create and sustain delivery of "Excellence in Customer Service'
Cleveland Clinic	To discover what makes the clinic function successfully (first AI initiative)
Mc Donald's	To become the best employer in each community around the world by putting "People First"
Roadway Express	To engage its unionized workforce into strategizing about the company's future
Save the children	To change how the organization could be re-created and led to achieve and sustain its mission
NASA	To create a strategic plan for OHR division to align with larger NASA vision and to work to build a more inclusive participative culture

Source: Adapted from Appreciative Inquiry Handbook by David L. Cooperrider, Diana Kaplin Whitney, Jacqueline M. Stavros retrieved from https://books.google.co.in

Appreciative Inquiry motivates the employees to share their best practices and to interact with each other so that they can delve into the areas where the organization can excel. "Appreciation and connecting" are the two pillars of Appreciative Inquiry. Employee engagement is seen at its best where the employees do not have to compete for resources. Research has shown that organizations which make both job and personal resources available for employees have high level of engagement. Thus, it can be assumed that Appreciative Inquiry supplies the necessary job and personal resources to contend the basic psychological need and intrinsic motivation; thereby contributing towards employee engagement. A higher level of employee engagement refers to a higher level of vigor, dedication and absorption in work. Vigor, dedication and absorption are the three elements that comprise work engagement as per Schaufeli and company. To assure that these elements are present, availability of job and personal resources should be adequate. Implementation of appreciative inquiry ensures that these resources are available in the hands of the employees. Thus, appreciative inquiry paves the way to employee engagement (Verleysen and Acker, n.d.).

Verleysen, B. and Van Acker, F. conducted a survey to find out the relationship between Appreciative Inquiry and work engagement. The study was conducted among 132 employees of Flanders and Netherlands. For the purpose of the survey, they developed a Connecting and Appreciation at Work Scale. Result of the study showed that intrinsic motivation played a mediating effect in the relationship between Appreciative Inquiry and Employee Engagement. The study depicted that intrinsic motivation was displayed at instances when "employees experience positive feelings and enjoyment because of the activities themselves, exploring new frontiers and striving to master new challenges".

Guevara (2016) carried out a research project at an Art and Design University in the South Western Region of the United States. The main purpose of the project was to apply the AI framework as a model for encouraging collaboration and trust between two departments of the University. Hammond (1996) has asserted the role of appreciative inquiry in redefining things. The responses of the participants indicated that Appreciative Inquiry plays an effective role in building up trust between colleagues as well as embracing change through a positive outlook. This development of trust helped to develop collaboration among the team members.

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Building trust is the root to building engagement. Development of trust is a time taking phenomenon but once it is achieved it has substantial impact on engagement. Employee feel more engaged when they work in a safe, cooperative environment. Safe in this context means that employees trust one another and are able to quickly resolve conflicts when they arise. Trust could have an enormous effect on organizational effectiveness especially during change. Thus, if Appreciative Inquiry is implemented in organizations, trust may be build up among the employees which in turn will help to improve the level of employee engagement.

The study also showed that Appreciative Inquiry helps to develop collaboration. In a globalized world that we live in today, the issue of collaboration among employees working in various teams across cities, countries and continents has become very significant. McKinsey & Company's report on Mapping the value of employee collaboration(2006) observed the following:

- Falling communication costs, globalization and the increasing specialization of knowledge based work are making collaboration within and among organizations increasingly important;
- Yet few companies understand or know how to manage the intra-company networks
- A few leading companies are beginning to map their networks of relationships, to analyze the economic costs and benefits that key interactions create, and to identify value creating interventions
- Successful interventions help companies to reduce complexity, redefine roles, and allocate financial physical and human resources more efficiently

Facilitating collaboration amongst employees enables a feeling of being connected with company, co-worker clients and changes in the internal and external environment and definitely contributes in increasing their engagement levels. So, it can be assumed that Appreciative Inquiry helps to build collaboration among employees which in turn contributes to higher engagement.

CONCLUSION

Appreciative Inquiry generally yields results which is immediate and pronounced. Not only personal, but the result also leads to organizational transformation too. Successful implementation of Appreciative Inquiry improves organizational performance, productivity and profitability. Results of Appreciative Inquiry can be made sustainable by strategically aligning the core processes of an organization with Appreciative Inquiry principles and methods. AI principles and methods should be integrated with the day to day practices of the organization so that the level of participation and motivation of the employees increase to a considerable amount.

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Chapter 86
The Conceptual Model of Managing Older Employees to Achieve Their Work Engagement

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ABSTRACT

The purpose of the chapter is to present, on the basis of theoretical starting points, the importance of management of older people for the entire society as well as the problem of older employees and their management as an important branch of human resource management, which presents a major challenge for companies. The main aim of the chapter is to design the conceptual model of managing older employees to achieve their work engagement, which will serve as the basis for understanding the successful ageing of older employees and creating an appropriate working environment favourable for all generations. By promoting active ageing and introducing the management of older employees, companies can achieve an important increase in the work engagement of older employees, a change of generally accepted stereotypes, myths, and prejudices about older people and the reduction of discrimination of older people in the labour market. The appropriate working conditions that should be available in all companies contribute to the improvement of management of older employees and their work engagement.

INTRODUCTION

The European Union is witnessing significant demographic changes due to a reduction in birth rates and an increase in life expectancy that has led to a consequent increase in the older population (Magnavita, 2017). Given the demographic shifts in today's workplace, worker age would appear to be an important individual difference. It is important for at least three reasons. First, with the aging population, it is important to see how jobs might be redesigned to enable people to continue to work successfully. This

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is especially important as the cessation of work at mid-career is becoming less of an option for many workers. Second, it is important to determine which specific job characteristics are most helpful for different age groups. Third, given the cost of job redesign efforts, it is important to begin to see for which employee populations such efforts may be the most valuable (Zaniboni et al., 2014).

Diversity and inclusion in the workplace are increasingly accepted as fundamental business tools in today's organizations. This is because businesses are gradually beginning to recognize that their potential to achieve better results is increased when people from diverse backgrounds and perspectives are included at different levels of the organization, including in the decision-making process. However, many organizations still struggle with how to effectively implement a robust diversity and inclusion agenda and embed it into their business plan (Sanyal, 2015). In companies should provide that aging at work involves the processes, mechanisms, and conditions that enable employees to achieve favorable subjective and objective work outcomes across the working life span, and particularly at higher ages (Potocan et al., 2018; Nedelko and Potocan, 2019). Extant research on successful aging at work has focused primarily on personal resources (e.g., abilities, motives, etc.) and largely neglected contextual factors that may enhance favorable work outcomes among older employees (Zacher and Yang, 2016).

With regard to job attitudes, job satisfaction and work engagement are two important positive dimensions of work-related well-being (Rothmann, 2008). Indeed, it is becoming critical to understand how to design jobs to keep workers of different ages satisfied and engaged in their work (Truxillo et al., 2012b). Zaniboni et al. (2014) found out that relationship between certain job characteristics and job attitudes may differ across the life span. The creation of a unified approach to diversity and inclusion, which is embedded in the business ethics of the organization, can have a sustainable positive impact on the health and well-being of individuals, business and society (Sanyal, 2015).

Zaniboni et al. (2014) summarized that different job characteristics will differentially affect job outcomes of older and younger employees. According to Kooij (2015) successful aging is closely related to sustainability at work; individual employees age successfully when they are able to preserve and regenerate resources to achieve their personal goals and maintain health, motivation, and work ability, now and in the future. To effectively manage their resources, aging workers should strive for current and future person–job fit (e.g., optimally utilizing current strengths and abilities, without overtaxing and thus exhausting abilities, and also developing skills and abilities needed for future work requirements). Hence, an important question is how to increase current and future person–job fit, and thus achieve sustainable and successful aging at work.

The ageing of the population represents one of the biggest challenges for managing older employees in a company. The first step towards the adequate management of older employees is to create an appropriate working environment that enables the successful result of ageing for employees and thus the achievement of goals, performance and competitiveness of the company. This study provides an important start for further investigations about the role of age in job design. The main objective of this paper is to present the conceptual model of managing older employees to achieve their work engagement. Due to demographic changes, we wanted to create a model which could help to better management of older employees and increase their work engagement. In the paper we used the compilation and descripton method. Model was created based on studies for which we used the compilation method. With the description method we described a single approach in the model of management of older employees to achieve their work engagement.

At the beginning of literature review authors present demographic changes and description of age. The paper continue with description about negative stereotypes about older employees and poor management

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of older employees in companies. At the end of this chapter authors present the literature review about work engagement of older employees. From this theoretical review and their own knowledge about the thopic, authors compiled the findings and based on this built a model of managing older employees to increase their work engagement as a key for competitive advantage of the company. The model is focused on external factors (demographic changes, active agin gof the population, discrimination aginst the elderly, stereotypes about the elderly), internal factors (human resource management, strategic human resource management), managing older employees, approaches to managing older employees and work engagement of older employees. Older people may experience negative attitudes and discrimination based on their age. Creating friendly and healthy environments acknowledges diversity, fights ageism and ensure that everyone has the opportunity to fully participate. Thus, good managing older employees and appropriate working environment for older employees contributes to their engagement at work.

LITERATURE REVIEW

Demographic Change

The world's population is ageing rapidly (World health organization, 2017). Ageing has become a necessary focus of interest in today's society (Aaltio et al., 2014). Worldwide, the proportion of people age 60 and over is growing faster than any other age group. Between 1970 and 2025, a growth in older persons of some 694 million or 223 percent is expected. In 2025, there will be a total of about 1.2 billion people over the age of 60. By 2050 there will be 2 billion with 80 percent of them living in developing countries (World Health Organization, 2002, 2017).

The global workforce is rapidly aging, with large numbers of older workers delaying retirement and remaining at work, leading to a mixing of multiple generations of employees, each with its own set of defining experiences, values and expectations (Roussin, 2015). Given the increase in the percentage of employees over 50 years old in many industrialised countries, and shrinking numbers of younger workers, companies need to rely on retaining older workers (Dabic et al., 2017; Rosi et al., 2018). However, due to raised retirement ages, older workers will have a longer work life than recent cohorts (Stamov-Roßnagel and Biemann, 2012).

Ageing demographics are impacting employers around the world and, for many organisations, there are strong business reasons to develop strategies for managing the age profiles of their workplaces. Societal ageing is not necessarily bad news for business: older workers can be a valuable resource for employers in terms of skills, in-house knowledge and flexibility. Further, as population age, businesses are delivering goods and services to an ageing market, and older workers can be a valuable resource. While ageing demographics can provide opportunities for the business community, there are significant challenges facing employers (Beazley et al., 2017).

Conceptualizing Age

Usually, age is understood in terms of chronological age, referring to one's calendar age. However, the concept of age is multidimensional (Aaltio et al., 2014). Kooij et al. (2008) summarize five different approaches to conceptualize aging of workers:

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1. Chronological age refers to one's calendar age. In this approach the distinction between older and younger workers is based on calendar age. As mentioned, the term "older worker" may refer to workers from the age of 40 to those aged over 75.
2. Functional or performance-based age is based on a worker's performance, and recognizes that there is a great variation in individual abilities and functioning through different ages. As chronological age increases, individuals go through various biological and psychological changes. These changes may be reflected in the health, psychical capacity, cognitive abilities and performance of individuals.
3. Psychosocial or subjective age is based on the self and the social perception of age. Subjective age (or self perception) refers to how old an individual feel, looks and acts, with which age cohort the individual identifies, and how old the person desires to be. The social perception of age involves age norms applied to an individual with respect to an occupation, company, or society. Psychosocial definitions have focused on three issues: the age at which society perceives an individual to be older, the social attitudes that are held toward older workers (or the perceived attributes and stereotypes of older workers) and the implications for personnel decisions of labeling a worker as older.
4. Organizational age refers to the aging of individuals in jobs and organizations. The aging of individuals in jobs and organizations is more commonly discussed in the literature about seniority and job or organizational tenure. The effects of aging may often be confounded by the effects of tenure and vice versa. Nonetheless, organizational age may also refer to career stage, skill obsolescence and age norms within the company.
5. The life span concept of age borrows from a number of the above approaches, but advances the possibility for behavioral change at any point in the life cycle. This behavioral change may be affected by three sets of factors: normative, age-graded biological, and/or environmental determinants, which are strongly related to age; normative, history-graded influences, which are related to the age-cohort, and c) non-normative unique career and life changes. To capture the unique impact of the life span approach, life span age can best be measured by life stage or family status.

Many studies refer the term »older employees« to employees from the age of 40 years to those aged over 75 years old (Desmette and Gaillard, 2008). Kooij et al. (2008) also summarize that in studies concerning labor market participation, the term »older worker« usually refers to workers aged 50 or 55 and above. This threshold is chosen because in many countries this age range features a decline in the participation rate in the labor market. Brooke (2003) and Tew (2004) summarize that researchers examining older people in organizations, often put the threshold at 40 or 45, seeing »old« as referring to obsolete knowledge, skills, and attitudes. Zacher and Rudolph (2015) state that as age is a continuous variable, no cut-off exists when a worker becomes an »older worker«, but, for practical reasons, organizations and governments often use cut-offs such as 40, 45, or 50 years.

Ageism and Negative Stereotypes About Older Employees

A workplace age stereotype represents beliefs and expectations about workers based on their age. Prejudice is more affective and attitudinal, involving feelings rather than cognitions. Discrimination represents the behaviors adopted as a consequence of stereotypes and prejudices (Rego et al., 2018). Authors Lazazzara and Bombelli (2011) summarize that the positive contribution of older people at work is often overshadowed by negative stereotypes associated with growing older. These stereotypes

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influence the strategic choices and generational replacement policies adopted by companies and consequently the proportion of older workers in the labour market. According to Rego et al. (2018) ageism is stereotyping of and discrimination against individuals or groups on the basis of their age. One of the most common stereotypes about older employees relates to poor performance. Several negative stereotypes about older workers are common (see e.g., Finkelstein et al., 2013; Ng and Feldman, 2012, Rego et al., 2018) and influence the outcomes of HRM-related decisions in a variety of settings. Amongst the most prevalent are that: older emplyees are less motivated and have lower performance, are more resistant and less willing to change, have lower ability to learn, and »deserve« less training investment because of their prospective shorter time remaining in their position. Almost all these negative stereotypes are inaccurate. Authors Appelbaum et al. (2016) summarize that the most common stereotypes regarding age are: slower learning, decreased physical and mental ability, less flexibility, less adaptability, less motivation, less innovativeness, and less productivity in relation to wage demands compared to younger workers. These stereotypes all suggest that people perceive old-age workers as less productive compared to their younger counterparts. Fineman (2011, p. 64) argued that there is no consistent effect of age on work performance. Also, Ng and Feldman (2008) argue that older employees typically perform as well as younger employees and outstrip them in many areas. According to Rego et al. (2018) ageism at the workplaces leads to conflicts, misunderstandings, and failures in cooperation and communication between older and younger organizational members. Mainly when it is espoused by managers, ageism also leads organizations to not invest in older employees' training (or to not provide training that fits the older employees' needs and motivations), and to discriminate against older workers in selection processes. Authors also summarize that ageism against older workers also prolongs negative consequences at the social and economic levels, and makes the adoption of good practices of active ageing more difficult. In fact, ageism toward older workers gives rise to early exits and poor re-entry rates, thereby creating imbalances and pressures on social security systems, producing damaging effects on the economy overall.

Poor Management of Older Employees in Companies

Older employees present an increasingly important source of labour for organisations. So, they should be managed properly according to their specialty – age. Many foreign authors (Naegele and Walker, 2006; Robson et al., 2006; Frerichs et al., 2012) define the management of the older employees as a concept of measures and strategies for managing and controlling of aging, planning and implementation of an active aging strategy at the organization level, with an emphasis on retention of older people in the work process and prolonging their active life, also covers part of the human resources management and the introduction of new measures that change under the influence of the aging process or other factors related to the age. As such, management of older employees is a part of human resource management and because of its' strategic value for organisations is included also in strategic human resource management.

Irrespective of age, an employee needs the appropriate skills and knowledge to be productive and to help the organisation achieve its strategic objectives. However, in many organisations, older employees are less likely to be offered training opportunities than their younger compatriots. A person is able to learn at any age and the older worker is capable of adjusting to changes in work (Nedelko et al., 2017). Many people assume that older workers are homogeneous but this is not the case. There are significant differences between older employees and these differences need to be acknowledged and understood (Davis et al., 2017).

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Generational differences present a critical new aspect to workplace diversity. The growing number of older employees and negative attitudes regarding them by the younger employees create the need to better understand intergenerational communication, that is, communication between younger and older people in the workplace (Wok and Hashim, 2013).

Desmette and Gaillard (2008) argue that employers have often viewed older employees as liabilities, rather than as valuable resources. Wok and Hashim (2013) summarize that the employer's attitudes have consistently indicated the older employees might cost more or might potentially deliver fewer benefits than younger ones, and thus, they would make less valued employees. Chiesa et al. (2016) summarize some negative perceptions held by managers about older employees: inflexibility, unwillingness or inability to adapt to new technology, lack of aggression, resistance to change, complacency, and the presence of physical limitations that increase the cost of health insurance. According to Weeks et al. (2017) other negative stereotypes include the belief that older employees produce lower-quality work than younger employees, that they are less productive, and that they are resistant to change. A belief among employers and managers is that older employees are not current on required skill sets and that their skills are dated.

As the number of older employees is growing, it is necessary to emphasize the barriers to adequate integration of older employees. Ageism, as mention in the previous chapter of this paper, is one of the most common stereotypes. The consequences of ageism affect and compromise organizational growth and performance. Additionally, this issue makes it more difficult for older employees to perform at their best. Individual work performance does not depend entirely on age, but rather is mediated by different factors that vary throughout life. Nevertheless, some argue that productivity decreases as the workforce ages, though this often occurs due to self-fulfilling biases. Age discrimination in employment undermines the basic human right to work and can have a devastating effect on individuals; impacting on physical and mental health and undermining a person's self-confidence and self-esteem (see, e.g. Appelbaum et al., 2016; Skirbekk, 2004; Engelhardt et al., 2010).

Work Engagement of Older Employees

Banihani et al. (2013) claim that work engagement has positive consequences for employees and organisations. The benefits of being engaged range from positive emotional outcomes to improving organisational performance. According to Pitt-Catsouphes and Matz-Costa (2009) disengaged employees negatively affect their co-workers' engagement. Banihani et al. (2013) summarize that at the individual level, engaged employees perform better than non-engaged employees. There are four reasons that make engaged employees (older and younger) perform better than non-engaged employees: (1) engaged employees experience positive emotions such as happiness, enthusiasm, and joys; (2) they have better health; (3) they are able to create their own job and personal resources and (4) they often transfer their engagement to others. Moreover, work engagement influences the well-being and performance of employees. Also, lack of employee engagement may ruin a company's productivity. Sadly, many leaders still can't keep their employees engaged (see, e.g. Lu et al., 2016; Bakker and Demerouti, 2009).

From the theoretical review in previous chapters, we have compiled the findings and based on this we have built a model of managing older employees to increase their work engagement as a key for competitive advantage of the company, which is presented in the next chapter.

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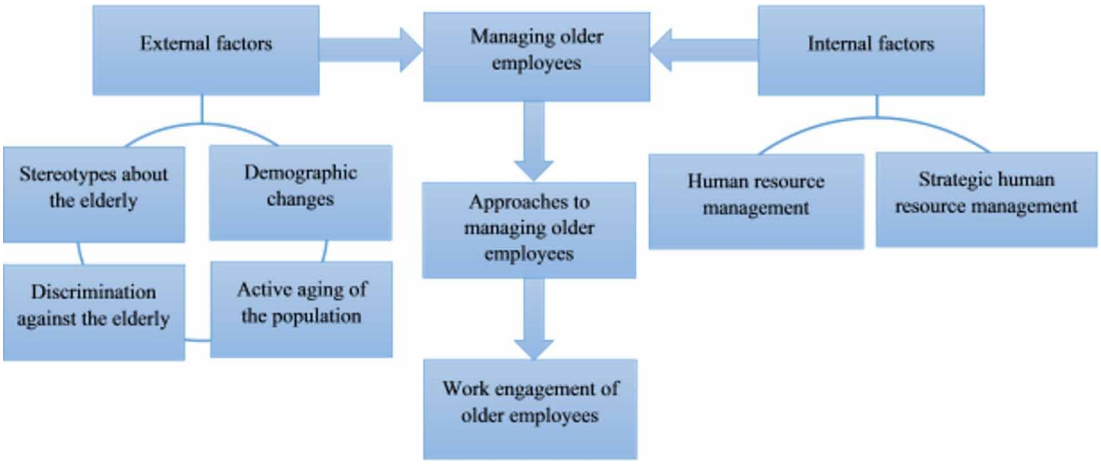
The Conceptual Model of Managing Older Employees to Achieve Their Work Engagement

Management of older employees and the designing of an appropriate working environment for older people contributes to their engagement at work, while providing an opportunity for older employees to be active and continue to contribute to the success of the company. Achieving the work-life balance of older employees is a key factor in achieving the goals and competitiveness of the company, as older employees are thus provided with a better quality of working life, better health and well-being and a reduction in workload. In this way, employees are committed to work and satisfied, and thus motivated, productive and successful in performing and solving work tasks.

The full range of approaches to managing older employees in the conceptual model is a novelty through which the company can promote and maintain the working ability of older employees, which is reflected in their commitment to the workplace. These approaches affect the improvement of the working environment for all generations, the achievement of common results and the greater social reputation of the employer - in the sense of a "socially responsible company". Work engaged employees is an important factor in achieving the goals, performance and competitiveness of the company. In this way, employees feel connected with their work, but at the same time they feel able to successfully perform work requirements, which helps to increase productivity and well-being at work. Furthermore, the management of older employees as the modern branch of human resources management has a positive impact on improving work processes and creating an organizational climate that will be attractive to all generations. Below we present a conceptual model for managing older employees to increase their work commitment (Figure 1).

Figure 1. Conceptual model of managing older employees to achieve their work engagement



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External Factors of Managing Older Employees

Among the external factors of managing older employees we included demographic changes, active aging of the population, discrimination against the elderly and stereotypes about the elderly which are described in more detail in the following.

Demographic Changes in Slovenia

The demographic structure is changing. The population of Slovenia is progressively ageing. Despite the expected increase in the population in the coming years, which should reach its peak in 2025, we can expect major changes in the age structure. Life expectancy at birth is constantly increasing; from 1995 to 2015 it grew from 74.1 to 80.5 years and it is projected to extend for a further 2.9 years by 2035. However, the current fertility rate (1.58 children per woman) is not sufficient for the complete replacement of the population in the long term, which should be about 2.1 children per woman. Thus, the median age of the population will grow from 36 years in 1995 to 48.1 years by 2035. This means that the share of children under 14 years will fall by 5 percentage points. Active population between 15 and 64 years will decrease by 10 percentage points, which will largely depend on the reduction of the population of 25–49 year-olds. On the other hand, the share of the elderly is increasing, both those belonging to the older workforce (50–64 years) as well as the even older population (Statistical Office of the Republic of Slovenia, 2016).

Reaching old age is a consequence of a higher quality of life, largely due to great advances in science and medicine. One of the tools to reduce such strong dependence of the inactive, mainly pensioners, on employed persons is postponing retirement. Active ageing and subsequent retirement also depend on good health. Data from SILC show that, based on self-assessment of health status, the share of people who assessed their health status as good or very good is growing. Between 2005 and 2014 the share of people between 55 and 64 years who assessed their health status at least as good grew from 34% to 49%. Likewise, during the same period the share of people aged 65 or more who made the same assessment increased from 18% to 27%. Involvement of the population aged 55–64 in the labour market grew from 31% to 35%, while the inclusion of 65–69-year-olds fell from 12% to 10%. Activity in old age does not mean only later retirement and thereby lower expenditure on pensions, but also the preservation of mental activity and physical health (Statistical Office of the Republic of Slovenia, 2016).

Active Aging of the Population

Population ageing is one of humanity's greatest triumphs. It is also one of our greatest challenges. As we enter the 21st century, global ageing will put increased economic and social demands on all countries. At the same time, older people are a precious, often- ignored resource that makes an important contribution to the fabric of our societies (see, e.g. World Health Organization, 2002; Magnavita, 2017).

Active ageing is the process of optimizing opportunities for health, participation and security in order to enhance quality of life as people age. Active ageing applies to both individuals and population groups. It allows people to realize their potential for physical, social, and mental well being throughout the life course and to participate in society according to their needs, desires and capacities, while providing them with adequate protection, security and care when they require assistance. Active ageing aims to extend healthy life expectancy and quality of life for all people as they age (World Health Organization, 2002).

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Discrimination Against the Elderly

For a constructive coexistence between generations it is necessary to maintain a positive interpersonal relationship and solidarity between the young, the middle-aged and the elderly. The Eurobarometer conducted an opinion poll in 2012 on discrimination in the EU. Results showed that in Slovenia 42% of respondents believe that discrimination against the elderly over 55 is widespread, compared to 14% who believe in discrimination against people younger than 30 years. On a 10-level scale of "feeling if someone would occupy the highest elected political position in Slovenia" respondents expressed the opinion that it would be more normal if they were younger than 30 years (value 6.8) than if they were older than 75 (value 5). Even when it comes to equal opportunities in recruitment, the first ranked opinion with 66% was that a person older than 55 years is in disadvantage if the company is choosing among two equally qualified candidates, compared with 14% if a person is younger than 30 years. Similarly, on the impact of the crisis on the labour market persons over 55 were placed in the first place as most discriminated, whereas persons under 30 were placed last. Even on the topic of active ageing, 49% expressed the opinion that people older than 55 are generally viewed positively and only 45% felt that they can contribute to society as paid workers. For this reason, it is necessary to raise awareness of the contribution and potential of each of the following age groups in raising the quality of life and enhancing human capital. Abilities and skills of the elderly are an important part of human capital; mobilization and use of these skills could strengthen the social status of the elderly and relieve the younger generation (Statistical Office of the Republic of Slovenia, 2016).

Rabl (2010) summarize that the popular stereotype among older employers is: "Older employees are unmotivated". Such beliefs about older employees may develop into age discrimination, which brings about many negative consequences for both employees and organizations. Also, author summarize that age discrimination consists of behavior that excludes certain categories of people and disadvantages them relative to others solely due to their age. It occurs when preferential decisions are based on age, rather than on an individual's merit, credentials, qualifications, or job performance. Age discrimination thereby includes refused employment, dismissal from jobs, less payment, or denied promotions, training or other benefits because of age.

Stereotypes About the Elderly

Schulz et al. (2006, p. 43) define age stereotypes as »a simplified, undifferentiated portrayal of an age group that is often erroneous, unrepresentative of reality, and resistant to modification«. According to Dordoni and Argentero (2015) older employees are stereotypically viewed more negatively compared to younger employees, and this stereotyping is at the heart of employment discrimination against them. Schloegel et al. (2018) summarize negative age stereotypes toward older employees: they are frequently viewed as less productive, less creative, more resistant to change, less able to learn, less receptive to new technologies, and less willing to attend training sessions or take risks. Many of these stereotypes do not fit reality. For example, older employees' performance is not generally lower than that of younger employees, but rather is often even higher.

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Internal Factors of Managing Older Employees

Among the internal factors of managing older employees, we included human resources management and strategic human resource management.

Human Resource Management

Armstrong and Taylor (2014) define human resource management as strategic, integrated and coherent approach to the employment, development and well-being of the people working in organizations. Human resource management is concerned with all aspects of how people are employed and managed in organizations. It covers the activities of strategic human resource management, human capital management, knowledge management, corporate social responsibility, organization development, resourcing (workforce planning, recruitment and selection and talent management), learning and development, performance and reward management, employee relations, employee well-being and the provision of employee services.

Human resource management has to change as the business environment changes. It has to do this as a mixture of responding to changes in that environment and predicting such changes. The future is unpredictable and it is hard to determine what it will bring. It is important to be flexible and to acquire as much knowledge as possible to help cope with these uncertainties. Successful human resource managers and departments have a significant strategic impact on their organizations (Aghazadeh, 2003). According to Armstrong and Taylor (2014) human resource management is a comprehensive and coherent approach to the employment and development of people. Human resource management can be regarded as a philosophy about how people should be managed. Human resource management involves the application of policies and practices in the fields of organization design and development, employee resourcing, learning and development, performance and reward and the provision of services that enhance the well-being of employees. These are based on human resource strategies that are integrated with one another and aligned to the business strategy.

Strategic Human Resource Management

Strategic human resource management can be defined as the linking of human resources with strategic goals and objectives in order to improve business performance and develop organizational culture that foster innovation, flexibility and competitive advantage. In an organisation strategic human resource management means accepting and involving the human resource function as a strategic partner in the formulation and implementation of the company's strategies through human resource activities such as recruiting, selecting, training and rewarding personnel (see, e.g. Harrison and Bazzy, 2017; Akong'o Dimba, 2010; Chang and Huang, 2005; Das and Kodwani, 2018). Strategic human resource management is designed to help companies best meet the needs of their employees while promoting company goals (Harrison and Bazzy, 2017).

Strategic human resource management is an approach to the development and implementation of human resource strategies that are integrated with business strategies and support their achievement (Armstrong and Taylor, 2014). Schuler and Jackson (2007) stated that strategic human resource management is fundamentally about systematically linking people with the company. Also, authors Armstrong and Taylor (2014) assert that strategic human resource management takes the notion of human

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resource management as a strategic, integrated and coherent process and associates it with an approach to management that involves adopting a broad and long-term view of where the business is going and managing it in ways that ensure that this strategic thrust is maintained. It is influenced by the concepts of strategic management and strategy.

Managing Older Employees

Naegele and Walker (2006) defined managing older employees or age management as »those measures that combat age barriers and/or promote age diversity«. Authors summarize that age management encompasses: recruitment; learning, training and lifelong learning; career development; flexible working time practices; health protection and promotion, and workplace design; redeployment; employment exit and the transition to retirement; and comprehensive approaches which focus on the whole life-span of the workforce and encompass preventative and remedial measures.

The definition of age management emphasises that age related factors should be taken into consideration in daily management, including work arrangements and individual work tasks, so that everybody, regardless of age, feels empowered in reaching their own and corporate goals. The eight targets of age management are (Ilmarinen, 2012): 1. better awareness about ageing; 2. fair attitudes towards ageing; 3. age management as a core task and duty of managers and supervisors; 4. age management included in human resource policy; 5. promotion of work ability and productivity; 6. lifelong learning; 7. age-friendly work arrangements and 8. safe and dignified transition to retirement.

Approaches to Managing Older Employees

The proportion of older employees will increase during the next few decades, therefore the new approaches to managing older employees are necessary. In this regard, it is important to promote the quality of life and well-being of the population, especially older people, and to promote solidarity between the generations. A good working life is an important platform to promote active ageing. Therefore, occupational health and safety plays a crucial role in securing active ageing through a better and longer work life (Ilmarinen, 2012). Thus, Fuertes et al. (2013) summarize that organisations should consider age appropriate job design, ensure workers are kept flexible, support lifelong learning and better enable the intergenerational transfer of knowledge.

In the following subchapters we present the approaches to managing older employees which are associated with the model.

The First Approach: Changed Attitudes Towards Older Employees

Why are changes in attitudes towards age in society and worklife needed? The answer is simple, because many of companies discriminate on the basis of age. Negative attitudes towards ageing generally derive from ignorance and old myths and beliefs. The collection of information on age management contains a notable amount of “real” information on ageing. The critical false beliefs concern age and productivity, age and mental growth, and age and learning (Ilmarinen, 2006).

According to McMullin and Marshall (2001) older employees believed that their fate was linked to ageismand that their work experience was discounted by management. Managers wanted to be rid of older workers because they commanded higher wages than younger workers. The is-sue was cost reduction,

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and age was implicated unintendedly.Still, managers seemed to use stereotypical images to discourage older workers and they did not organize work routines tofacilitate the adaptation of them. Instead, they subcontractedthe easy jobs, relying on the experience of the older employees for difficult work while not adapting the workplace. Ilmarinen (2006) emphasizes that workplaces will ultimately affect how the age challenge is received and how successfully practices will be changed. Together the employer and the worker form a team that can change age practices and methods of operation.

Older employees are the only segment of the labor force projected to grow in coming decades. Every other demographic is shrinking or staying the same. Discrimination and stereotypes about older employees can limit their opportunities to advance, or even stay in the workplace. Older employees received significantly lower training investment than did the other aged employees (Chiesa et al., 2016). Age-related stereotypes about skills and capacities of older workers, that are highly prevalent in work organizations, are a key obstacle for their employability. Negative age stereotypes are harmful and may stimulate increased social distance and avoidance between people of different generations. Companies should eliminate stereotyped beliefs about older employees (Selm and Heijden, 2014; Chiesa et al., 2016). According to Selm and Heijden (2014) management in working organizations should need to remember that age and generation differences in media portrayals, do not correspond to real-life situations at the workplace. Therefore, in order to combat age-related stereotyping at work, and to enhance workers' employability throughout the life-span, key figures, such as HRM professionals, and line managers should increase sensitivity to the possibility of real and portrayed age and generation differences. Managers in working organizations should emphasize positive portrayals of older employees (i.e. positive stereotypes), in order to activate normal and non-ageist behaviors toward them, and, herewith, to increase their life-long employability.

Second Approach: Creating Suitable Working Conditions For Older Employees

The World Health Organization (2002) offers the following recommendations to employers, trade unions, and authorities:

1. Work ability, not age, should be the basis of evaluation when a worker is employed and kept employed.
2. Employers should ensure adequate flexibility in work and the structuring of the work environment so that work environments suit ageing workers of very different kinds. Workers should be able to participate in decisions that affect their work.
3. Work arrangements should be flexible enough to enable work division if needed, part-time work, and periods of absence for personal reasons. Workers should be encouraged to work part-time during the traditional age period when early retirement is common.
4. Training should be part of every worker's job. Workers should be trained in advance with regard to technical changes at the workplace, the training should support workers, and their work needs to be rearranged due to age factors.

Periodic health examinations should be made mandatory for all workers 45 years of age and over. The examinations would have the following objectives (World Health Organization, 2002):

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- To recognize deficiencies in the functioning of the musculoskeletal, respiratory, and cardiovascular systems that can then be rehabilitated with the aid of different physical exercises,
- To recognize age-related changes in vision, hearing, and the musculoskeletal system that would make it necessary to change the work environment and provide aids for workers,
- To recognize physical and mental risk factors that increase morbidity and mortality rates so that appropriate care can be organized and the needed changes in lifestyle made.

Most papers on continuing training of older employees concentrate on their lower training incidence (Zwick, 2015; Chiesa et al., 2016; Ilmarinen, 2006; Addio et al., 2010). Obviously, it is a problem in a greying economy when older employees get less than optimal training because this might negatively affect their productivity and employability. Ilmarinen (2006) emphasizes that age discrimination is visible in the participation in training and applies to people already at the age of 40 years and older. Therefore, companies should provide training for their older employees. Learning is not dependent on age but, instead, on the organization of learning. Therefore, special attention should be paid to the selection of learning strategies and environments suitable for ageing employees. Ageing people learn in their individual way and at their own speed, both of which differ from those that are often natural for younger people. The instructors of ageing employees are required to have special competence related to ageing and learning. Training younger and ageing people together may, in some situations, be appropriate and beneficial, provided that training is not organized on the young people's terms. Good learning results among ageing employees, however, presuppose a suitable learning speed and a relaxed atmosphere. A tight schedule and stress may ruin the learning experience. Therefore, ageing employees need methods, environments, and learning schedules that work for them. Further, Zwick (2015) adds that management has to take into consideration the specific training needs and interests of older employees in order to increase training efficiency and the motivation to participate in training.

Employees also should be motivated to support long-term health education provided at the workplace and to initiate programs related to public health and living habits. Programs to stop smoking, reduce alcohol consumption, and change eating habits or the level of physical activity, for example, are known to sustain health and vitality with age (see, e.g, Ilmarinen, 2006; World health organization, 2017). The purpose of promoting health at the workplace is to promote a healthy lifestyle (improving eating habits, promoting physical activity, smoking cessation), reducing stress at work, improving interpersonal relationships, improving communication at work, strengthening and protecting mental health and improving well-being, increasing employee satisfaction, etc. (Ministry of Health, 2018)

Recommendations for better workplaces for older employees are (Ilmarinen, 2006):

- Exposures in the physical work environment (for example, vibration, noise, air impurities, heat, cold) must still be decreased, especially for ageing employees.
- Physical work demands (e.g., poor work postures, handling of heavy workloads, repetitive work and repetitive movements, static muscle work, peak loads) should be reduced for ageing employees, especially women. Ageing employees work more often in physically demanding occupations than younger ones do, for example, because they have less education. Physical workload and the resulting musculoskeletal disorders are still a significant cause of work disability among ageing employees.

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- The psychological work environment of ageing employees should be developed in order to support and utilize workers' strengths. Ageing employees also need inspiring and challenging work in which new things can be learned.
- The possibilities of ageing employees to plan and regulate their own work should be improved.
- Ageing employees need good individual supervision and age management.
- Ageing employees need flexible, individual, and ergonomic workhours. Ageing employees need flexible workhours for the health, educational, or other needs associated with their life course (e.g., nursing and care work). Flexible workhours are also a good means with which to equalize the workload. Part-time work is the most common and most popular model used to regulate workload with age.
- The health promotion of ageing employees should be intensified—the employees' own responsibility for their living habits is significant. Also, the affect of illnesses on work should be reduced. The risk of occupational diseases among ageing employees should be significantly reduced and prevented.
- Functional capacity should be supported and developed multidimensionally—physical, mental, and social functional capacity creates the basic prerequisites for good, high-quality worklife and successful ageing. All properties of functional capacity can be improved, but activity seems to decrease with age. The activity theory indicates that active, versatile activities maintain functional capacity, while passivity decreases it, regardless of a person's age. Adjusting activity to one's life situation, searching and accepting choices and alternative forms of activity are ingredients of successful ageing.
- Ageing employees should be offered the possibility for life-long learning, and their professional competence should be developed through the use of appropriate learning processes. Learning is not dependent on age. People of all ages are able to learn, but ageing people learn things differently than younger people.
- The basic values of ageing employees should be taken into account better in the changes and management of worklife.
- The work ability, work well-being, and employability of ageing employees should be supported by holistic, continuous measures whose effectiveness is monitored. The development of the work environment, work community, and management must be combined with the development of personal health, functional capacity, and competence of employees. Together these measures are strong enough to affect both the improvement in worklife and the sufficiency of personal resources with age.

Third Approach: Reducing The Workload of Older Employees at The Workplace

The demographics of the global workforce are changing, specifically with a more age diverse workforce bringing new research questions. It becomes more important to find ways for people to stay satisfied and engaged in their work at different life stages (Zaniboni et al., 2014). Research has shown that job characteristics can lead both positive and negative work outcomes (e.g. Slattery et al., 2010). For example, the research showed that task variety was related to positive outcomes like job satisfaction but also to negative outcomes like job overload (Humphrey et al., 2007). Based on research authors Rumbles and Rees (2013) summarized that managers state that they are aware that employees are experiencing high stress, but managers do not do anything to alleviate employee stress.

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There are certainly benefits to employees from being committed to their work and feeling positive about the organization that they work for, but the long-term benefit for employees "themselves" is closely linked to their personal psychological well-being (Robertson and Cooper, 2010). Therefore, companis should aware of the importance of reducing the workload of their employees (Rumbles and Rees, 2013). According to Robertson and Cooper (2010) the concept of full engagement rests on the principle that the beneficial impact of narrow engagement is enhanced when psychological well-being is also high – and similarly the negative effects of low engagement would be exacerbated when psychological well-being is poor. Authors, from another research also summarized that people with higher levels of psychological well-being are healthier (mentally and physically), have happier lives and live longer but importantly, research also shows that they are likely to take a more positive approach to their work and their relationships with colleagues. High levels of psychological well-being are associated with a range of positive outcomes and behaviours that would support stronger employee engagement. People with higher levels of psychological well-being are less likely to see ambiguous events as threatening.

A fundamental aspect of wellbeing is building resilience particularly in stressful times and these issues can readily be addressed by the provision of training (Rumbles and Rees, 2013). Spreitzer and Porath (2012) defined ongoing learning at work as fundamental to creating sustainable performance. In their research into what makes for a consistently high-performing workforce, they found that happy workers were more productive. They argue that organizations need to create ''thriving'' workers who are not just satisfied and productive but are also engaged in creating the future and are less susceptible to burnout. They believe that learning is a vital component to achieve this because people who are developing their abilities are likely to believe in their potential for future growth. The implications of their research for organizations is to create opportunities for employees to learn and grow by fostering practices that encourage individual and organizational learning. This is important for all age-diverse employees.

The ways by which the risk of workload can be reduced include (see, e.g. Leka et al., 2003; De Silva et al., 2017):

- Primary prevention, reducing workload through: ergonomics, work and environmental design, organizational and management development,
- Secondary prevention, reducing workload through: worker education and training, and
- Tertiary prevention, reducing the impact of workload by: developing more sensitive and responsive management systems and enhanced occupational health provision.

Fourth Approach: Suitable Organizational Climate For Older Employees

Zacher and Yang (2016) stress that research on successful aging at work has neglected contextual resources such as organizational climate, which refers to employees' shared perceptions of their work environment. Based on research authors Vong et al. (2018) summarized that stressful employees working in organizations characterized by unsupportive organizational climate had far less desire to stay with the organization than those working in organizations with supportive organizational climate.

In one study with more than 8,600 employees from 128 companies, researchers showed that age diversity in organizations positively predicted organizational age discrimination climate which, in turn, influenced employees' collective organizational commitment and overall company performance (Kunze et al., 2011). Also, Zacher (2015) summarize that the composition of a company's workforce influence on organizational climate for successful aging. A study from 2011 showed that the more age diversity

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there was in a company, the higher the age discrimination climate, or employees' shared perceptions of age discriminatory practices. A follow-up study from the same team of researchers showed that the negative effects of age diversity on age discrimination climate are attenuated when companies have diversity-friendly human resource policies in place and when their top managers have low levels of negative age stereotypes.

To create a supportive development climate and retain older workers, employers need to foster older workers' development orientation and ensure that their work assignments provide opportunities to learn new knowledge and skills (Armstrong-Stassen and Schlosser, 2008). Organizational culture and climate can have important influences on the extent to which employees can age successfully at work. Positive cultures and climates impact on older employees' attitudes and well-being, as well as company outcomes such as firm performance and turnover. Practitioners can create organizational cultures and climates for successful aging by training company leaders, implementing age-inclusive human resource strategies, and actively managing their increasingly age-diverse workforces (Zacher, 2015).

According to Zacher (2015) an organizational climate for successful aging has positive effects on older workers' job satisfaction, organizational commitment, work engagement and motivation to continue working after traditional retirement age. At the organizational level, research showed that age discrimination climate has negative effects on employees' collective commitment and firm performance. Moreover, a positive age-diversity climate was linked to higher company performance and lower collective turnover intentions among employees.

Work Engagement of Older Employees

Robinson et al. (2004, 9) define work engagement as "A positive attitude held by the employee towards the organisation and its values. An engaged employee is aware of business context, and works with colleagues to improve performance within the job for the benefit of the organization". The successful ageing of employees in a working environment is crucially connected with their work engagement (Tett and Meyer, 2006). From this perspective a beneficent working environment is extremely important for older employees, since it affects the work engagement of older employees (Rožman et al., 2017). It is important to establish such working environment in which older employees feel well when working. The work engagement of employees strengthens, when employees feel well at work. On the contrary, the work engagement of employees decreases when the level of well-being is low (Robertson and Cooper, 2010). May et al. (2004) argued that engaged employees have high levels of energy and are enthusiastic about their work. Bakker and Demerouti (2008) assert that engaged employees often experience positive emotions, including happiness, joy, and enthusiasm; experience better health; create their own job and personal resources; and transfer their engagement to others. Lu et al. (2016) summarized that work engagement represents a positive working state that improves organizational performance. It is considered a key indicator of organizational health because it significantly influences employees' performance, job satisfaction, turnover intentions, customer satisfaction, organizational success and firm profitability.

The research shows that highly engaged employees are more positive about their jobs and organizations, treat co-workers with more respect, help others improve work efficacy, continually improve work-related skills, are highly active and demonstrate in- and extra-role performance (Lu et al., 2016; Bakker and Demerouti, 2009).

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DISCUSSION

Older employees are an important part of the workforce of modern societies and their numbers will increase in coming decades. They have different skills and competences compared with other generations. Without their participation in working life, a shortage of professional, structural and networking capacities will arise. Also, the transfer of their tacit (silent) knowledge to younger generations is important. The strongest combination of competences in the workplace is based on the different strengths of different generations (Ilmarinen, 2012).

Managing older employees in the company has an impact on creating an effective work environment, changing negative age stereotypes, and dispelling earlier misconceptions and mistreatment. Thus, a changed mindset about older employees in all companies is needed. By encouraging active aging and introducing management of older employees, companies can achieve a significant increase in the older workforce's commitment, a change in generally rooted stereotypes, myths and prejudices about the elderly, and the reduction of discrimination on the part of the elderly in the labor market. The social inclusion of all employees, including the elderly, is necessary for the success of the company and their participation in shaping the future of the company.

In the development of appropriate approaches to managing older employees and their workforce, the following facts should be derived, in particular from the following facts and the awareness that the aging of the employee reduces the ability to perform physically demanding work tasks, which means that the complexity of work tasks must be adapted. It should be remembered that age reduces the ability to cope with psychosocial pressures, which means that the emphasis should be placed on reducing stress and workload, providing a balance between work and private life, and organizing meetings where older people can give opinions on possible improvements in workplace. Old age also increases the ability to perform and solve complex tasks, so older people should be able to work together to solve difficult tasks or problems, as they increase their knowledge and experience with age, and at the same time allow them to participate in important decisions, which relate to the company.

Difficulties in communication and cooperation between different generations in the workplace are inevitable. Ways to overcome these barriers are reflected in the formation of generational mixed teams, the promotion of intergenerational cooperation and the resolution of work tasks, informing employees of differences in personality traits and characteristics between generations and in promoting informal socializing.

To improve the management of older employees and their working commitment the proper working conditions that should be available in all companies are important. These include, in particular, redistribution or adjustment of jobs, adjustment of schedules, different forms of workplace flexibility, the provision of work from home, the burden on older employees with easier work assignments. It is useful if older employees circulate around the company instead of working for many years in the same office and becoming melted. It is also important that companies invest in ergonomic jobs, as older people often face visual impairments or pain in the spine.

In order to manage older employees and their commitment in the workplace, more attention should be given to improving the work-life balance of older employees in the company, as this leads not only to higher productivity but also to greater satisfaction, motivation at work, well-being of employees, belonging to the company and above all to the commitment of employees at the workplace. The company best maintains the work-life balance by setting up various programs and measures, as well as flexible working practices. Thus, it is necessary to determine the complexity of the work, workload, good com-

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munication within the company, promote intergenerational synergy in the company and care for good relations among employees, because only in this way can they achieve together successfully solving tasks and achieving results.

According to Naegele and Walker (2006) recruiting older applicants brings a number of benefits for a company: 1. older applicants are often more skilled than younger applicants; moreover, their skills frequently better match the organisation's needs; 2. hiring older employees can raise the general skills level of the work force. The workforce, and the organisation, also benefits from the older recruits passing on their experience to younger colleagues; 3. the synergy gained by linking the new and existing skills of the workforce can raise the organisation's productivity and capacity for innovation; 4. recruiting older employees leads to greater age diversity both in individual teams and in the company as a whole; 5. in certain age-sensitive trades and companies, older employees can – by virtue of their age – respond more readily to changing customer wishes and needs; such responsiveness can also result in improved turnover; 6. recruiting older applicants can improve the corporate image of the organisation – both internally and externally – and so improve its corporate identity; 7. recruiting older applicants can solve the problems of poor labour supply.

Older employees are an important part of the company and society. Here are a few key advantages in hiring and retaining older employees (see, e.g. Kooij, 2015, 2008; Zacher, 2015; Dordoni and Argentero, 2015):

1. *They have good leadership skills*. Older workers are good leaders because they often have stronger communication skills than their younger colleagues.
2. *They know what they want*. Older people have been working their entire lives and are often not searching for the next opportunity like younger employees.
3. *They're loyal*. Since older employees are typically more satisfied with their jobs, they also tend to stay longer.
4. *They have a good work ethic*.
5. *They have strong networks*. Older workers have been in the workforce longer and they've had more time to meet people and network along the way.

CONCLUSION

Older employees with their treasure trove of knowledge and rich experience bring great benefits to the company. It is therefore important that leading employees and managers put the management of older employees into the forefront as one of the key factors contributing to raising the company's performance and competitiveness. It should also be taken into account that in the management of older employees, human resources management is also of key importance, since the company consists of age-diverse employees with different values, experience, knowledge, personality traits and expectations (Potocan et al., 2016; Potocan et al., 2018). The task of managers is to successfully integrate all the above into the work environment, taking into account that age-diversified employees will succeed and work only in an appropriately designed work environment.

To have workers of all ages satisfied and engaged at work, we need to understand which working conditions are the best for them. Indeed, some characteristics may have more beneficial effects in younger workers but less in older workers (e.g. task variety). For example, it may be important for supervisors

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to challenge younger workers with different tasks, in particular during the organizational socialization phase when they are learning their jobs. In contrast, providing more tasks may actually be detrimental to older workers. Furthermore, considering the aging working population, it is important for organizations to develop jobs that enable people to continue to work successfully. It seems that older workers may not benefit from simply doing more tasks, but rather from opportunities to use their wide range of accumulated skills (Zaniboni et al., 2013). Human resources programs that create opportunities for older workers to use their skills, avoiding (or reducing) requirements to perform more tasks, may be helpful in keeping older workers satisfied and engaged at work. For example, it may be a competitive gain for organizations to utilize the experience and competencies of older workers, and to promote the transfer of knowledge and skills to younger colleagues (e.g. mentoring and coaching programs), by having younger employees perform a wide range of tasks (Zaniboni et al., 2014).

The better health and life expectancy of older employees improve their opportunities to enhance an agefriendly society. However, a good working life is an important prerequisite for older employees to remain active and ensure that society benefits from their strengths and talents. In doing so, they participate actively in building up a sustainable and caring society, where solidarity exists between the generations and productive working life is an important platform for active ageing. Satisfactory employment can help people avoid sickness and physical or mental deterioration, secure good cognitive and physical capacity, and promote positive and active attitudes towards life. The quality of working life has a big impact on all workers, because we spend so much of our time at work. Therefore, investments in active ageing need to be secured during the working years. The investments in occupational health and safety in workplaces are also investments for the rest of our lives (Ilmarinen, 2012).

The paper is limited to the field of older employees and their work engagement which is reflected in the conceptual model of managing older employees.

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KEY TERMS AND DEFINITIONS

Active Ageing: Active ageing is the process of optimizing opportunities for health, participation and security in order to enhance quality of life as people age.

Age Management at Workplace: Age management uses a life-course approach and creates equal opportunities for all generations.

Older Employees: Older employees are an important part of the workforce of modern societies and their numbers will increase in coming decades. Older employees have different skills and competences compared with other generations.

Work Engagement: Work engagement is positive behaviour or a positive state of mind at work that leads to positive work-related outcomes.

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Chapter 87
Women Managers and Generations: A Study of Obstacles

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ABSTRACT

The number of women in organizations is increasing in most countries, but the representation of women in managerial positions is still disproportional. The percentage of women in leadership positions globally is only 29%. Grant Thornton annual survey 2019 reveals that India still ranks the fifth lowest in having women in managerial roles. Thus, though diversity at work is increasing, there are still fewer women in the boardroom. The main reason for this is the hurdles and obstacles that women managers face. The chapter studies the various obstacles faced by women managers. Also, it takes into account the role of generation and aims at comparing the hurdles faced by women managers belonging to Generations X and Y. The study is undertaken with special reference to the banking sector. Major findings reveal that there is a difference in obstacles faced by women managers belonging to Generations X and Y.

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INTRODUCTION

The number of women in organizations is increasing in most countries. Women are also entering into those sectors which were traditionally dominated by men. The rate at which women are becoming entrepreneurs is nearly twice that of men (Zellner, 1994). Even the percentage of women in managerial roles has increased across the globe in recent years (Powell and Graves, 2003). But despite all this, the representation of women in managerial positions is still disproportional (Linehan, 2008). The percentage of women in leadership positions globally records to only 29%. Grant Thornton annual survey 2019 reveals that India still ranks the fifth lowest in having women in managerial roles. Thus, though diversity at work is increasing, the number of women in the boardroom level is still less (Hillman, Shropshire, and Cannella, 2007).

Women today are no more willing to be a peripheral part of the workforce. They wish to take up senior positions and are willing to earn a good amount of money. But many researchers found that even if women have a high level of qualifications and the desire to achieve something professionally, not many get to fulfill it. As there are still many barriers that stop women from being successful (Chenevert and Tremblay, 2002). Women mangers tend to encourage employee development and are better than male managers when it comes to team building at work (Chenevert and Tremblay, 2002). Women are believed to improve the company's overall performance when occupying managerial roles. They are considered better managers than their male counterparts (Cristian Dezs and David Gaddis Ross, 2012). As women managers play a crucial role in the development of the organization, companies must find a way to retain these talented and high potential managers. And one way they can do this is by creating a favorable organization culture (Cooper, 2001). As many studies suggest that women consider unfavorable organizational culture and norms as a bigger obstacle than societal and family issues (Lyness and Thompson). Many women managers leave managerial roles because of a lack of support from subordinates and seniors and bad work culture (AgnieszkaLipińska-Grobelny, 2010).

As per (Tolani, Bhadade & Sao, 2018), the issues and challenges faced by women belong to different generations are not the same. The expectations of women brought up in the dissimilar historical background and economic conditions will not be the same. The majority of women manager currently at work belongs to Generation X and Generation Y. Generation X is more adaptive and ready to learn new things. They like to have work-life balance, job stability and prefer to give importance to personal life (Janet Bickel, 2005, FGI, 2004, Santos & Cox, 2000). On the other hand, Generation Y, have very high expectations. They are smart, good at the use of technology, frequently upgrade skills and like to hop job for better opportunities (Kim, 2008, Eddy S.W. Ng, 2010, Sara De Hauw et al, 2010, Ng et al, 2010).

Thus organizations should focus on modifying their policies and practices and aim at creating a culture that is conducive for the advancement and retention of women employees. Companies should make constant efforts to increase diversity across the organization (Cooper, 2001).

The current paper aims at understanding the various obstacles faced by women occupying leadership roles. It also aims at finding the strategies that the companies can adopt to eliminate these obstacles. Several studies in the past have focused on understanding the issues of women managers but there is a very little study conducted considering the role of Age and Generation. A study conducted by Jyrkinen, M, &McKie L, 2012 supports the argument that women belonging to different age groups experience different challenges and their way of responding to these challenges is also different. In this study, we have attempted to compare the obstacles faced by Generation X and Generation Y women managers.

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LITERATURE REVIEW

Obstacles Faced by Women Managers

Various studies on women managers reveal that there are various obstacles that women experience at the individual, organizational, and societal level (Karam & Afioni, 2013).

One of the major obstacles faced by women at the workplace which prevents their advancement to the top position is the **"glass ceiling"**. This phenomenon is prevalent in various organizations (Simpson and Altman, 2000). Though many women are acquiring managerial positions today, the glass ceiling still exists (Meyerson and Fletcher, 2000). According to Stroh, Langlands, & Simpson, (2004), Glass ceiling is nothing but a set of barriers at the workplace which are stopping the women employees from setting their foot in the upper management. And even if they get into a top position they find it hard to survive there. Glass ceiling also hinders the career development of women employees. In most organizations, it is the lack of organizational support, mentoring, and networking (Vlado Dimovski, 2010). Glass ceiling as a barrier largely influences the career of women (David, 2001; Mavin, 2000).

Another challenge that women at managerial roles need to deal with is the **''queen bee syndrome''** (Keeton, 1996). It is a condition where women who have reached the upper management are not willing to extend any support or help to the women aspiring to reach the top (Ng & Chiu, 2001). These are those women who are not ready to break the cycle, as they had struggled hard to reach to the top, they want other women to also go through that same set of issues. These women have taken efforts to create their space in the male-dominated culture. Thus they do not let other women enter easily (Staines, Tavris, & Jayaratne, 1974). A study conducted by Belle Derks (2015) suggests that women exhibiting "queen bee syndrome" do three things: 1) Avoiding social contact with other women. 2) Endorsing the current gender hierarchy. 3) Presenting themselves like men. Queen bee syndrome leads to a lack of support for women and creates unavailability of women mentors for aspiring women juniors. (Fox, 2005)…

Among the various obstacles faced by women managers, one most prevalent obstacle is the **gender stereotype** (Karam & Afioni, 2013). This obstacle is considered as most disruptive for women managers. (Claudia Peus, 2015). Women experience a lack of cross-gender support, difficulty in accessing the social network, isolation, clubbism (Kauser &Tlaiss, 2011) and all of these affect adversely women manager's morale and performance (Ikhlas A. Abdalla1, 2015). Gender stereotypes, bad attitudes towards women, and cultural biases are hindering the performance of women managers across all the settings (Vlado Dimovski, 2010). Leadership roles have always been associated with male gender and this trend continues to persist in various places even today (Eagly, 2007; Heilman, 2001; Powell, Butterfield, & Parent, 2002). Women are always considered suitable for a supportive role and are never considered for central activities (Dasgupta & Asgari, 2004).

Work-family conflict is also a major issue that affects women managers (Heilman & Okimoto, 2008). Many women managers are unable to focus on their work effectively as they do not receive support from their family members. A researcher states that family support plays a crucial role in the advancement of women (Karam & Afioni, 2013). Many women managers say that is very hard to balance both work and family especially when you are handling crucial responsibilities at work and there is a lack of organizational and family support (Guendouzi, 2006). They are always trying to figure out whether to put family first or work. This dilemma is created mostly because of the lack of women- friendly organizational policies and lack of support from the family members (Maume, 2006). The Organization

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must strive to make policies to ensure that women find it easy to carry out all the roles such as women, a mother, a wife, and a manager effectively. (José M. Coronel, 2010).

Few researchers suggest that some barriers to women managers are also **individual-centered**, such as personality traits, attitude, confidence, and risk-taking capacity, etc. (Powell, 2000). Inner drive and self-efficacy play an important role for a women manager to succeed in their career. Women's lack of self-interest, self-confidence, and inclination are considered as major blocks to the career advancement of women employees (Peus & Traut-Mattausch, 2007).

Gen X & Gen Y

People belonging to Generation X and Generation Y have different historical backgrounds, thus the characteristics and attitudes of these two generations are very dissimilar (Reisenwitz & Iyer, 2009). Thus they exhibit different behaviors and expectations at work (Tolani, Bhadade & Sao, 2018).

Generation X born from 1961 to1979 (Gurau, 2012), are also called Baby Busters. It is a diligent and reliable generation (Gursoy, Maier & Chi, 2008). Generation X individuals are also called as Latchkeys generation as it was the first generation, whose parents were working and many of these people had witnessed parental divorce. Because of these life experiences, this generation puts family first and likes to have work-life balance (Janet Bickel, 2005). They give their family and personal life more priority and are not willing to sacrifice it for work (Cole et.al, 2002). This generation is more adaptive to changes and is willing to learn new ways of doing things (FGI, 2004). Though generation X was the first generation to use technological devices such as computers, laptop on a day to day basis, with rapid technological advancement, this generation is not as technologically urbane as the new generations. But as this generation is a highly adaptable, they constantly try to learn the new technology. When it comes to career and job, this generation constantly makes efforts to develop skills and qualifications which can aid in their career development (Santos & Cox, 2000). Thus this generation is result-oriented and highly focused (Tolani, Bhadade & Sao, 2018). Generation X individuals as compared to the new generation individuals prefer job stability, they consider job decision as an important decision and they prefer hopping jobs only if they get better salaries and growth prospects (Tulgan, 2000). This generation has witnessed a major recession and financial crises of the 1980s and 1990s (Galambos, 2014). Thus when making an investment or financial decision, this generation gets very cautious. (Crumpacker & Crumpacker, 2007).

Generation Y born from 1978 to 1994 (Sheahan, P, 2005), are also called Millennials and Eco boomers (Howe and Strauss, 2003). Millennials are poised, smart, and enthusiastic and curious individuals (Kim, 2008). This generation continually upgrades their skills and likes to be successful (Eddy S.W. Ng, 2010). But when it comes to their career, they frequently hop jobs and are always looking for better opportunities. This generation has very high standards and expectations when it comes to the workplace, and job (Sara De Hauw et al, 2010). This generation believes that a good workplace is one where the employees are treated well, and the health and wellbeing of the employee is important (Andrea Hershatter, 2010). According to Millennials, a conducive work environment is one where employees are treated as assets and they should be valued (Diane Randall Andrews, 2013). As this generation is born and brought up in the age of social media, they have high social needs, they like to maintain good interpersonal relationships at work (Ng et al, 2010). This generation of employees prefers working in teams. They are excellent collaborators (Dougan et al., 2008). They like to set team goals and believe in exhibiting team spirit (Gursoy et al., 2008).This generation as compared to the previous generations is more technologically, as they have been using various technological devices right from childhood.

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Thus this generation expects technological sophistication at their workplaces. Generation Y individuals put a lot of emphasis on flexibility at work (Iyet & Reisenwitz, 2009). As compared to Generation X, they prefer work-life integration over work life balance. As they are technologically urbane, they believe we can complete our work from anywhere, anytime without compromising on life. As this generation employees are unique and must be dealt with differently than the previous generations.

RESEARCH METHODOLOGY

Objectives of the Study:

Based on identified research gaps from the review of the literature, the following broad objective was constructed.

- To determine various obstacles faced by women managers.

The following hypotheses were formulated and this empirical study tests those hypotheses.

The Null Hypothesis

- There is no significant difference between obstacles faced by women managers at the workplace among the different age groups.
- There is no significant difference between obstacles faced by women managers at the workplace among different marital statuses.
- There is no significant difference between obstacles faced by women managers at the workplace among different years of experience.

Data Collection Method:

This study has adopted an online mode for data collection. The primary data has been collected by using a structured questionnaire for the study. As the study focuses on understanding the various obstacles faced by women managers at the workplace hence the questionnaire for the study is designed on the following parameters.

1. Workplace Ecosystem
    a. Work life balance
    b. Occupational Health
    c. Work values
2. Gender Discrimination
    a. Pay & Promotion
    b. Gender Stereotypes
3. Home & Work Conflict
    a. Children
    b. Family (In-laws)

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   c. Husband
4. Cultural Factors
   a. Societal Norms
   b. Perception
5. Individual Self

Sample Size:

The data for the study has been collected using a structured questionnaire. For the collection of data, a total of 120 women managers working in the banking industry have been reached. Out of 120, 99 respondents have filled the questionnaire and 3 responses were rejected due to incomplete information. Hence 96 valid responses were considered for the study. The random sampling technique is used to sample from the population. The sample comprised of 45.8% i.e. 44 respondents from age group of 30-40, 37.5% i.e.36 respondents from 40-50 and 16.67% i.e.16 respondents from 50-60.

MANOVA analysis is carried out to identify to the impact of various dependent variables on fixed factors i.e. age, marital status, experience vs obstacles.

DATA ANALYSIS AND FINDINGS

To determine the various obstacles faced by the women managers, MANOVA analysis was carried out by taking age, marital status, and work experience as fixed factors. The findings of the analysis have been put in the given below table.

Comparison of Responses Among age Groups

As anticipated and demonstrated in Table 1, the age has a significant impact on all the dependent variables (age vs obstacles; Wilks' Lambda = 0.00, $p < 0.05$).

Table 1. Age Vs. Obstacles

Multivariate Tests[a]									
Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[d]
Age	Pillai's Trace	1.907	72.355	42.000	148.000	.000	.954	3038.924	1.000
	Wilks' Lambda	.000	439.359[b]	42.000	146.000	.000	.992	18453.066	1.000

There is a statistical significant difference between responses among age groups i.e. 30-40, 40-50, and 50-60. They are significantly different on work-life balance, occupational health, work values, job aspects, pay & promotion, family and societal norms.

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Comparison of Responses Among Different Marital Status Groups

As anticipated and demonstrated in Table 2, the marital status has a significant impact on all the dependent variables (marital status vs obstacles; Wilks' Lambda = 0.01, $p < 0.05$)

Table 2. Marital status Vs. Obstacles

Multivariate Tests[a]									
Effect		**Value**	**F**	**Hypothesis df**	**Error df**	**Sig.**	**Partial Eta Squared**	**Noncent. Parameter**	**Observed Power[d]**
Marital_Status	Pillai's Trace	1.833	38.705	42.000	148.000	.000	.917	1625.617	1.000
	Wilks' Lambda	.001	120.662[b]	42.000	146.000	.000	.972	5067.800	1.000

They are significantly different on all parameters. As their marital status is changing they are different on the workplace ecosystem, gender discrimination, home & work conflict, cultural factors, and self as obstacles

Comparison of Responses Among Different Experience Groups

As anticipated and demonstrated in Table 3, the experience at the current position has significant impact on all the dependent variables (experience vs obstacles; Wilks' Lambda = 0.01, $p < 0.05$)

Table 3. Experience Vs. Obstacles

Multivariate Tests[a]									
Effect		**Value**	**F**	**Hypothesis df**	**Error df**	**Sig.**	**Partial Eta Squared**	**Noncent. Parameter**	**Observed Power[d]**
Experience	Pillai's Trace	2.577	22.822	60.000	225.000	.000	.859	1369.316	1.000
	Wilks' Lambda	.001	34.474	60.000	218.627	.000	.903	2038.992	1.000

There is a statistical significant difference between responses of groups having different years of experience i.e. less than a year, 1-5 years, 6-10 years, 11-15 years.

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RESEARCH IMPLICATIONS

Women managers today are an important part of organizations, the policymakers thus should try and understand their problems and attempts must be made to resolve them. This study will help the policymakers to understand the obstacles faced by women managers and will suggest to them the ways by which they can help women managers to overcome these obstacles.

FINDINGS AND CONCLUSION

It has been found in the study that the major obstacles faced by women managers which hinders their growth include lack of work-life balance, majority of women managers feel that they don't get enough time to fulfill their family responsibilities or to pursue their hobbies. Women managers often need to sacrifice on their social life, family time, or "me time" to be productive or creative at work. As women managers don't get enough time to focus on their health, many women occupying managerial roles suffer from various health issues such as obesity, hair fall, anemia, anxiety, depression, and stress.

Another obstacle faced by women managers is home and work conflict. The majority of women managers suggest that one reason they can't grow in their career is the lack of family support. Some women managers who are married with children feel very guilty that they are unable to give enough time to their children.

One of the obstacles in the various cultural barriers that women managers face. People at work make perceptions about their character, competence, and reputation the way they like. Also, the lack of enough female managers as role models at the workplace creates issues for women managers.

The Study also reveals that there is a significant difference in the obstacles faced by women managers belonging to Generation X and Y. Obstacles faced by women managers are different for women who are single, who are married, and for those who are married with children. The number of years of experience of the women managers has an impact on the obstacles faced by her.

The Study suggests that some ways by which companies can help women managers to overcome these obstacles are by providing a fair and transparent workplace which is gender-neutral. Providing flexibility to women managers at work such as flexible working hours, work from home facility, crèche facility in the company can help women managers to achieve work-life balance. Some women also feel that mentoring facility and wellness programs for women can also help them in overcoming their obstacles.

LIMITATIONS AND FUTURE RESEARCH DIRECTION

The study is restricted to women managers belonging to the banking sector. Thus further studies can be done to understand the obstacles faced by women managers working in other sectors. The results of the research cannot be generalized as it is limited to women managers of India. Thus research can be carried out on women managers of other countries and a cross country analysis can also be done.

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ANNEXURE

Table 4. Questionnaire

You get enough_time_to_fulfill_your_family_responsibilities
You get time_to_pursue_your_hobbies
You can smoothly_balance_your_work_and_life
organization_pay_adequate_attention_towards_women_employees_and_their_problems
Your organization_has_a_facility_of_work_from_home
organization_has_a_day_care_centre_facility_for_children
Your organization_has_flexible_work_timings
I_often_have_to_sacrifice_my_social_life,_family_time,_or_me_time_to_be_able_to_get_creative_and_productive_with_my_career
Mentoring_program_for_women_at_work_can_help_in_resolving_a_lot_of_problems_that_women_managers_face
Are_you_suffering_from_health_issues_like_obesity,_hair_fall,_and_anemia_due_to_work_pressure?
You_suffer_from_work_stress_due_to_excessive_work_pressure
Do_you_suffer_from_any_health_complications_like_High_Blood_pressure,_Diabetes_or_any_other_disease_due_to_work_pressure?
Do_you_experience_issues_like_anxiety,_depression,_sadness_or_any_other_psychological_stress_due_to_work_pressure?
Promotion_in_company_is_done_on_the_basis_of_merit
Your_company_policies_are_fair_and_transparent
Superiors_give_due_value_to_suggestions_put_by_women_employees
You_get_proper_cooperation_from_the_people_working_with_you
You_have_a_proper_grievance_redressal_system_for_employees_in_your_company?
Your_job_contribute_towards_your_personal_growth_and_development
Your_job_provide_you_with_an_opportunity_to_bring_out_your_best_potential_for_the_organization
Do_you_get_regular_feedback_on_your_work_performance_in_order_to_improve
Your_excellence_in_performance_is_rewarded_in_your_job
There_are_no_pay_disparity_based_on_gender
While_promoting_an_employee,_gender_of_the_employee_is_not_a_deciding_factor
You_are_required/expected_to_work_more_than_other_male_managers
There_are_not_enough_female_managers_as_role_models_in_your_workplace
Different_treatments_at_work_to_male_and_female_employees_occupying_the_similar_position
Subordinates_(people_working_under_you)_do_not_take_your_commands_seriously_as_you_are_a_female_manager
Subordinates_give_same_amount_of_respect_to_both_male_and_female_managers
Men_consider_women_as_women_and_not_professional_colleagues
Your_child_help_you_in_your_work_at_home
You_are_able_to_attend_all_the_school_meetings/commitments_of_your_child
You_donâ€™t_give_enough_time_to_your_children_because_of_your_job
You_feel_guilty_that_your_child_spends_most_of_the_time_in_day_care/or_with_a_helper_at_home
If_given_a_choice,_you_would_leave_the_job_and_prefer_to_stay_with_children_at_home
You_are_satisfied_with_your_child_care_or_other_caregiver_arrangement

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Table 4. Continued

You_feel_your_children_experience_loneliness_as_you_are_working
``
Your_work_often_gets_disrupted_by_family_commitments_and_responsibilities
You_face_several_difficulties_at_home_for_working
Your_family_forces_you_to_quit_your_job_and_asks_you_to_pay_attention_to_home_responsibilities
Your_spouse_share_the_parenting,_childcare_work
Your_spouse_helps_you_sufficiently_in_housekeeping_tasks
Your_spouse_feels_inferior_as_you_are_in_a_managerial_post
Your_spouse_feels_is_jealous_of_you_as_you_earn_more_than_him
You_make_valuable_contribution_to_your_family_finances
Your_spouse_value_your_contribution_to_family_finances
Work_Environment_is_equally_conducive_for_both_working_women_and_working_men
Your_colleagues_and_subordinates_are_supportive_and_caring
Your_male_subordinates_make_you_feel_uncomfortable
Experienced_instances_of_sexual_harassment_at_your_workplace
Getting_support_from_other_women_is_a_challenge
People_at_work_make_perceptions_about_your_(women_managers')_character,_the_way_they_like
People_at_work_make_perceptions_about_your_(women_managers')_competence,_the_way_they_like
People_at_work_make_perceptions_about_your_(women_managers')_reputation,_the_way_they_like
You_don't_get_enough_home_time
You_feel_you_don't_get_quality_time_with_your_partner
You_don't_get_time_to_spend_with_your_family_and_friends
You_are_unable_to_focus_on_your_health
Your_job_gives_you_a_sense_of_confidence
You_often_feel_that_you_are_tired_and_you_need_some_time_off
I_often_have_to_sacrifice_on_my_social_life_to_be_able_to_get_creative_and_productive_with_my_career
I_often_have_to_sacrifice_on_my_"me_time"_to_be_able_to_get_creative_and_productive_with_my_career.
You_are_able_to_overcome_challenges_faced_by_you_to_a_large_extent

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APPENDIX

Table 5 Profile of Respondents

Respondent Characteristics	Study N = 96
Gender	
Male	0 (0%)
Female	96 (100%)
Age	
30–40 years	44 (45.83)
40–50 years	36 (37.5)
50–60 years	16 (16.6)
Marital status	
Single	36 (37.5)
Married	28 (29.16)
Married with children	32 (33.33)
Education level	
Undergraduate	40 (41.66%)
Postgraduate	56 (58.33%)
Education Stream	
Engineering	20 (20.83%)
Commerce/Business	48 (50%)
Science	20 (20.83%)
Arts	8 (8.33%)
Work Experience	
Less than a year	4 (4.12%)
1-5 years	52 (54.16%)
6-10 years	28 (29.16%)
11-15 years	12 (12.5%)

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Chapter 88
Twenty-First Century Issues Impacting Turnover of IT Professionals: From Burnout and Turnover to Workplace Wellbeing

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ABSTRACT

Identifying the precursors of turnover has been the subject of examination for the past four decades. IT professionals are a critical group of employees in the current knowledge-driven economy, and as such, they experience unique job stressors. This chapter explores recent research on the organizational stressors that influence IT turnover intentions. The goal is to provide insights on how organizations can begin to stem burnout, turnover intentions, and eventual turnover while improving work-related wellbeing. A revised model of work-related wellbeing is also presented in this chapter. Another objective is to discuss current issues in the IT domain and provide new research directions. New research for the IT turnover literature will provide information to scholars and practitioners on how they might improve and alleviate the impact of turnover on organizations.

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INTRODUCTION

Identifying the precursors of turnover has been the subject of examination and study for the past four decades (Dinger, Thatcher, Stepina, & Craig, 2012; Joseph & Ang, 2003; Joseph, Ng, Koh, & Ang, 2007). Historically, researchers who study employee withdrawal in the form of turnover viewed two variables as key to understanding why employees voluntarily leave organizations: job satisfaction and perceived job alternatives (Hulin, Roznowski, & Hachiya, 1985). Over the last 30 years, however, considerable research has been devoted to developing predictive models of voluntary turnover, with job satisfaction, organizational commitment, and intention to quit among the most commonly proposed reasons for dissatisfaction (Ferratt, Agarwal, Brown, & Moore, 2005; Maier, Laumer, & Echardt, 2015; Moore, 2000a; Weinert, Maier, Laumer, & Weitzel, 2015).

Information Technology (IT) professionals are a critical group of employees in the current knowledge driven economy and as such, they experience unique job stressors (Weinert, et al., 2015). Stressors are stimuli or actions encountered by an individual at work. Stressors might trigger an individual to produce different responses in the form of strain that lead to burnout (Weinert et al., 2015). There is a difference between IT professionals and knowledge workers. Information technology professionals are workers in a technology services organization (Burrell, 2014). They are in occupations that include computer programmers, systems analysts, database administrators, information security, computer support specialists, application developers, network administrators, and team members who support and maintain computer systems, other technology and related activities (Burrell, 2014; Dixon, 2016).

Recent studies have shown that the IT professional's environment – knowledge oriented work and around-the-clock service is prone to creating job stress (Chen & Karahanna, 2014; Shih, Jiang, Klein, & Wang, 2011). Additionally, as organizations continue to ask more from their IT employees (e.g. increased workload), turnover intention and job burnout also are increasing (Zaza & Armstrong, 2016). Job burnout is an extreme or advanced form of job stress and has been recognized as an occupational hazard (Maslach & Leiter, 2016). Job burnout is important to researchers and practitioners because of its association with critical psychological and behavioral outcomes, including productivity, withdrawal, turnover, and employee well-being (Maslach & Goldberg, 1998; Maslach, Schaufeli, & Leiter, 2001; Weinert, et al., 2015). Job burnout has been identified as one of the main consequences of job stress (Maslach & Leiter, 2016; Maslach, et al., 2001).

BACKGROUND

In this chapter, the authors seek to explore previous research and the most recent findings on the organizational stressors that influence the turnover intentions of IT professionals. The goal is to provide insights on how organizations can begin to stem burnout, turnover intentions and eventual turnover. Another important objective of this chapter is to provide new research directions that have not been investigated yet or have been explored less. New research for the IT turnover literature will provide information to researchers on how they might improve and alleviate the impact of turnover amongst staff.

To this end, this chapter will:

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- Use previous research by the authors as the foundation upon which to explore new research directions associated with the antecedents of turnover and turnover intentions of IT professionals, such as burnout, work exhaustion and engagement.
- Make recommendations about what organizations can do to reduce stressors in the IT environment, and therefore reduce the likelihood of turnover.
- Discuss how the IT work environment and workers are changing.
- Identify retention strategies that practitioners can use to help prevent turnover as they try to remain competitive in an ever-changing, global environment.

Research presented in this chapter will contribute to scholarship and organizations by providing practical approaches that organizational leaders can use to retain IT professionals. Turnover intention and turnover is complicated, so organizations should avoid developing and implementing retention strategies without taking the time to understand the factors that influence IT employees' intentions to quit (Abii, Ogula, & Rose, 2013; Ferratt, et al., 2005).

RELEVANT QUANTITATIVE STUDY

In the article *An Exploratory Investigation of the Relationship between Disengagement, Exhaustion and Turnover Intentions Among University IT Professionals* (Ford, 2012; Ford, Swayze, & Burley, 2012), the researchers conducted a quantitative study to examine the relationship between these concepts by proposing the following research question: *To what extent is there a statistically significant relationship between disengagement, work exhaustion and turnover intentions among IT professionals in a single higher education institution in a major metropolitan area?* The researchers adapted the Job Demands-Resources (JD-R) Model of Burnout to use as the theoretical lens through which to explore work exhaustion, disengagement and how they influence turnover intentions among the selected population.

Their study and the associated outcomes and recommendations, provided insights into the unique work environment of university IT professionals and how workplace characteristics predict disengagement, work exhaustion and subsequent thoughts about quitting. Additionally, this study discussed engagement as one of the hot topics in the practitioner community. Engagement is of interest because of its perceived link to critical business outcomes like productivity, retention, loyalty and well-being (Bakker, Hakanen, Demerouti, & Xanthopoulou, 2007). Further, engagement is thought to be one of the ways that organizations can forge a path to competitive advantage (Schneider, Macey, Barbera, Young, & Lee, 2006).

Conceptual Framework

In their previous study, the authors adapted the Job Demands-Resources (JD-R) Model of Burnout as a framework to further understand work exhaustion, disengagement and their relationship to the turnover intentions of university IT professionals (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001). In their quantitative study, the authors asserted that the notion of job burnout is too complex to be studied as a single entity and therefore should be deconstructed into its primary components (Ford, et al., 2012). In the literature, one theory suggests that collective burnout is comprised of two major concepts: work exhaustion and disengagement (Demerouti, et al., 2001). Schaufeli and Bakker (2004), with a sample of nearly 1,700 workers in four different occupational groups found support for the two-dimensional

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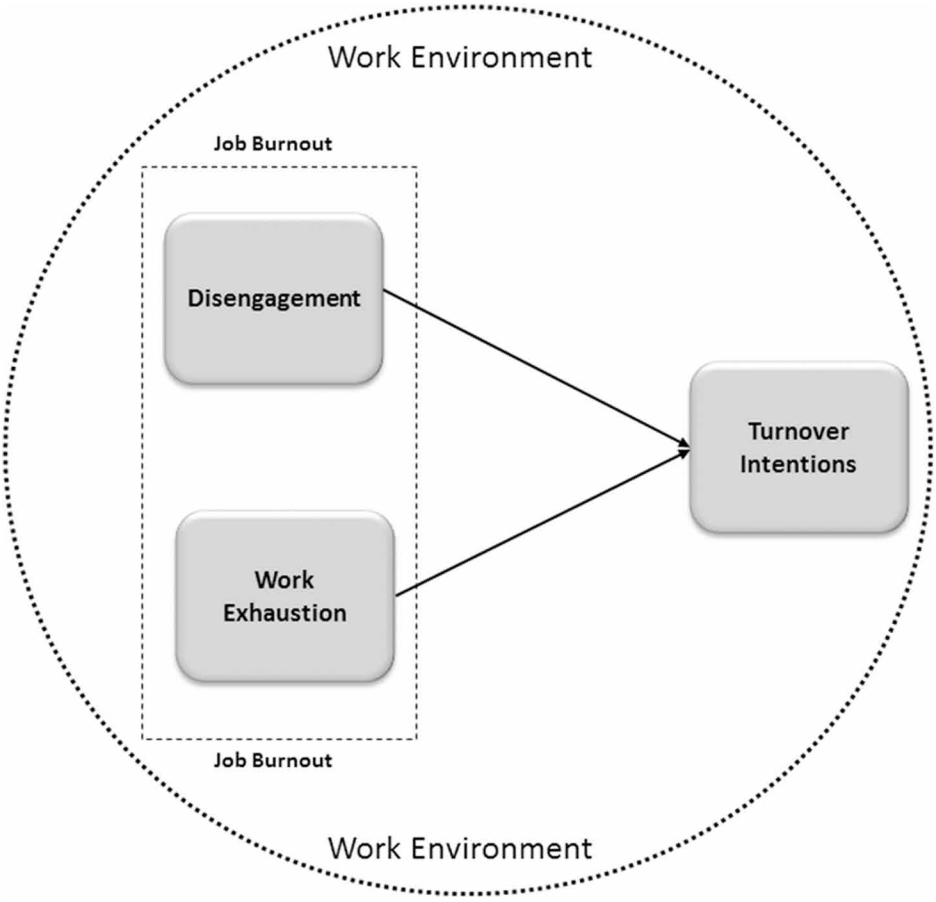
model with the notion that disengagement was related to job resources. However, Schaufeli and Bakker found that both demands and resources were related to work exhaustion.

Specifically, the JD-R model was recreated as depicted in Figure 1 to focus on disengagement and work exhaustion. Further, the antecedents of disengagement and exhaustion were removed from the model.

Figure 1. Revised model of Burnout and Turnover Intentions



A Review of the Research on Turnover and Turnover Intentions of IT Professionals

Although researchers and managers have long explored why people leave their jobs and why they stay, there is not a complete understanding of the problem. Researchers want to ideally understand turnover behavior, but in reality, it is difficult to empirically investigate actual turnover. At the time that an employee leaves an organization it is too late to intervene, prevent or understand how they reached their decision. As a result, researchers study existing employees and ask them about their intentions to leave (Lacity, Iyer, & Rudramuniyaiah, 2008). For this reason, many studies make the assumption that the intention to leave is both a proxy for and predictor of actual turnover behavior (Cohen, Blake, & Goodman, 2016).

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Turnover intention refers to an employee's deliberate and conscious intention to look for a new job or to voluntarily leave a current job (Joseph, et al., 2007). On the other hand, turnover is defined as the individual movement across the membership boundary of an organization and is said to occur when an employee voluntarily leaves an organization (Thwala, Ajagbe, Long, Bilau, & Enegbuma, 2012).

The notion of focusing on intentions rather than behavior is rooted in Ajzen's Theory of Planned Behavior (Ajzen, 1991), one of the best empirically supported theories of motivation. In short, this theory focuses on behavioral intentions to understand the link between attitudes and behavior. According to this theory, intention is the cognitive representation of a person's readiness to perform a specific behavior, and is considered to be the immediate precursor of behavior (Ajzen, 1991). Empirical results from turnover studies have supported the assertions that turnover intention is a stronger predictor of actual turnover compared to other antecedents like job satisfaction (Joseph & Ang, 2003).

Turnover has been a problem for the IT workforce since the early days of computing (Chang, 2010). In fact, turnover and retention of skilled IT professionals are still major issues for employers and recruiters of the IT workforce (Zaza & Armstrong, 2016). Since the beginning of the recording of statistics, the turnover of these professionals has been characterized as problematic and has been reported consistently over at least the past 40 years (Chang, 2010). One of the first reviews of IT turnover intentions was completed in the late 1970s (Willoughby, 1977; Zaza & Armstrong, 2016). In his review, Willoughby (1977) examined turnover statistics for IT professionals and concluded that it was a chronic problem (Willoughby, 1977).

Three decades later, Joseph et al. (2007) conducted a review of the literature on the turnover intentions of IT professionals from 1985-2005 to "review and reflect on our accumulated knowledge on IT turnover" and "enhance our understanding of the IT turnover phenomenon" (p. 548). In addition to exploring the direct effects on turnover intentions, Joseph et al. (2007) conducted a moderator analysis to identify possible sources of variation that could affect the direction and extent of these relationships. In their review, Joseph et al. (2007) identified six categories of factors that influence turnover intention for IT professionals. They are: desire to move (e.g., affective organizational commitment, job satisfaction), ease of movement (e.g., perceived job alternatives), job search, demographics (e.g., age, gender), human capital (e.g., organizational tenure), job-related factors (e.g., work exhaustion), and perceived organizational factors (e.g., fairness of rewards).

During the ten years since Joseph et al's (2007) meta-analysis, more than 35 new studies have been published on turnover intentions within the IT field (Zaza & Armstrong, 2016). But the research continues to identify a fragmented set of antecedents. Furthermore, many of the studies have produced inconsistent findings. For example, McKnight et al. (2009) found that work exhaustion did not predict turnover intention, whereas Shih et al. (2011) found that work exhaustion positively influenced turnover intention. Despite the number of studies on turnover intentions in the IT field within the last ten years, there has been only one attempt (beyond the Joseph et al. (2007) study) to analyze the accumulated data (Zaza & Armstrong, 2016). What is clear is that although the research has identified many important pieces in the turnover intentions puzzle as it relates to IT professionals, there is still more work to do to understand how these pieces fit together.

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CHANGES IN THE INFORMATION TECHNOLOGY WORKFORCE

Despite the numerous studies on the topic of IT employee turnover and recommendations to organizations on how to retain employees, the general turnover trend for IT professionals remains high (Lo, 2015). During economic downturns, turnover rates naturally decline, but the overall turnover trend for IT professionals has not declined (Lo, 2015). In fact, recent projections show that the computer systems and related services industry will grow by nearly 4% each year through 2020, placing information technology among the fastest growing industries (Henderson, 2012). With projections like these, the demand for qualified candidates will increase. But at the same time, student enrollment in IT-related programs has declined (Lo, 2015). This finding further intensifies the need for organizations to retain qualified and skilled IT professionals.

Living in an Ubiquitous World

Cybersecurity, hackers, around the clock access, and 24x7 data centers are indications of an ever-changing landscape for IT professionals. Furthermore, globalization, outsourcing, and increasing competition, puts IT employees under growing pressure to meet deadlines and reduce response time to customer requests (Syrek, Apostel, & Antoni, 2013). Moreover, ubiquitous and rapidly evolving mobile technologies such as smart phones and tablets (and increasingly wearable mobile devices such as wrist technologies) allow people to work any time, anywhere, and on any task (Reyt & Weisenfeld, 2015). Therefore, people work all the time, everywhere, and on everything (Chen & Karahanna, 2014; Reyt & Weisenfeld, 2015; Syrek, et al., 2013). In short, technology is having the effect of diminishing time and space, rendering the lines between work demands and personal life increasingly integrated, decontextualized, and overlapping (Chen & Karahanna, 2014; Reyt & Weisenfeld, 2015).

IT professionals are likely to experience the pressures of around the clock access more acutely as advances in the connectedness of technology have blurred the boundaries between work and personal life. While the majority of knowledge workers use technology as a way to enable them to be more connected to their work, IT professionals are responsible for creating and supporting the technology that enables the ubiquitous any time, any place mentality that exists in today's society and globally connected world (Chen & Karahanna, 2014). These demands for connectedness may lead to IT employees experiencing increased job burnout, higher turnover intentions and may eventually lead to turnover.

Fear of Becoming Obsolete

Another factor leading to increased job stress among IT professionals is the fear of becoming replaceable (Van Heerden, 2015). Due to changes and advances in technology, the competencies and skills required of IT professionals is always changing. In contrast to the past, today's environment is perceived as the knowledge era where intellectual capital drives an organization's competitive edge (Syrek, et al., 2013). Many of the new generation jobs are more technologically advanced and require employees who can perform these tasks with higher demand and to perform more and varied tasks in parallel thus requiring transitory or disparate skill sets, knowledge and experience. (Van Heerden, 2015).

Information technology workers have an intense desire to keep pace with the latest technology to avoid becoming obsolete (Dixon, 2016). Falling behind technologically could easily result in reduced company marketability, the fear of the company outsourcing the function, and laying off the employee

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without the skill set needed to acquire another position within the IT field (Dixon, 2016). IT employees must continually learn new skills over their entire career in order to adapt to new technological development and ever changing business requirements (Dixon, 2016; Van Heerden, 2015). The sheer volume of learning required can increase work exhaustion, with a negative effect on turnover (Dixon, 2016). To retain these employees and sustain their competitiveness, organizations should design jobs to create greater autonomy over the pace and process in the hands of IT workers and to offer additional and ongoing training, education, exploration of new and future technologies in preparation for future goals and objectives (Dixon, 2016).

Retention of skilled information technology professionals is becoming increasingly important as technology is introduced into nearly every functional aspect of organizations (Burrell, 2014). Given the growing impact of technology on organizational financial and operational success, organizations depend on technology and the technical and business knowledge of IT professionals to remain competitive (Dixon, 2016; Weinert, et al., 2015). In this context, employee turnover can be a costly problem for organizations. When employees leave, organizations have to attend to the high cost of training and development, burnout of existing staff, and decreased quality of products and services due to the shortage and/or inexperience of staff (Burrell, 2014).

Around the clock access, technological uncertainty and the demands that they create for IT workers is an interesting area for future research. While, around the clock access and technological uncertainty are key stressors in the IT environment, an aging IT workforce is another factor that is contributing to the turnover of IT professionals.

An Aging IT Workforce and the Threat of Lost Knowledge

As a result of the post WWII baby boom, a large number of employees are retiring from the workforce (Van Heerden, 2015). For the information technology sector, this creates a unique issue because as these individuals retire, the knowledge that they take with them creates a void among the remaining employees. This is especially true for long-tenured employees because they create a constraint for the organization by limiting the ability to replace the employee knowledge when they leave (Shumaker, Ward, Petter, & Riley, 2017).

This problem is more serious than it seems because these retiring workers are taking with them knowledge essential to the organization that cannot easily be replaced on the open market. They take with them knowledge that can only be developed internally over a long period of time (Shumaker, et al., 2017). This knowledge is deep, contextual knowledge related to embedded business processes and how information systems are integrated (Van Heerden, 2015). Also included in this knowledge is understanding where knowledge resides within the organization and how to access it (Van Heerden, 2015). Many organizations are not prepared for the loss of this deep knowledge when these IT professionals leave the organization. Because of the aging IT workforce, retention of IT workers is even more critical.

An aging IT workforce simply means that not all turnover can be prevented. The best that organizations can do in this case is to prepare for the departure of key employees by creating succession plans for transferring knowledge and identifying critical skills. In addition, organizational leaders should create a systematic approach to identify which knowledge is most critical and where to focus their energy if several employees are nearing retirement (Shumaker, et al., 2017).

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Unfortunately there is a dearth of research on age-related issues in the IT workforce (Shumaker, et al., 2017). Organizations should seek to understand the nature of potential knowledge loss as it relates to retiring employees. This is a consideration for future research.

JOB BURNOUT, WORK EXHAUSTION, TURNOVER, AND TURNOVER INTENTIONS

Previous literature demonstrates that burnout has an impact on the turnover intentions of IT professionals (Moore, 2000a; Weinert, et al., 2015). For example, research in the management and IT literature assert that turnover and turnover intentions can be an outcome of organizational factors such as, workload, time pressure and leadership, along with other antecedents that are specific to the IT profession, such as boundary spanning activities, IT (or professional) tenure, professional obsolescence, professional commitment and workplace characteristics (Demerouti, 2015; McKnight, et al., 2009; Syrek, et al., 2013). In fact, investigators claim that there are many other unmeasured variables that may be present in the IT environment to explain the phenomenon (Joseph & Ang, 2003; Lo, 2015).

Most studies on turnover and turnover intentions make explicit the causal theorizing that has always been implicit in the turnover research. Certain factors (both individual and situational) cause people to think about leaving or actually leaving their jobs (Joseph, et al., 2007; Zaza & Armstrong, 2016). Recent research therefore focuses on understanding these turnover intentions and as a result attempts to provide organizations with details for implementing successful employee retention actions (Weinert, et al., 2015). In this context, several investigations focus on work exhaustion as a source of turnover intention and acknowledge that IT professionals have a high degree of burnout, and accordingly a high degree of intention to quit their jobs (Armstrong & Riemenschneider, 2011; Moore, 2000a; Weinert, et al., 2015). The next section examines burnout and how it influences the turnover intentions and eventual turnover of IT professionals.

A Review of the Literature on Burnout

The IT research literature suggests that information technology professionals are especially vulnerable to burnout (Kalimo & Toppinen, 1995; Maier, et al., 2015; McGee, 1996; Moore, 2000a; Van den Broek, et al., 2017; Van Heerden, 2015; Weinert, et al., 2015). Burnout is a particularly tragic endpoint for professionals who entered the job with positive expectations and enthusiasm. Burnout is defined as a reaction to chronic job stress that is characterized by exhaustion and mental distancing or disengagement (Maslach & Leiter, 2016; Schaufeli, Leiter, & Maslach, 2009). Employees experiencing burnout lose the capacity to provide the intense contributions that make an impact at work (Schaufeli, Bakker, & Van Rhenen, 2009; Schaufeli, Leiter, et al., 2009). Further, research has linked job burnout to a plethora of ailments, including depression, physiological problems and family difficulties (Cropanzano, Rupp, & Byrne, 2003; Maslach & Leiter, 2016). Accordingly, IT research has begun to link job burnout to turnover intentions and eventual turnover (Kim & Wright, 2007; Moore, 2000a; Weinert, et al., 2015).

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Burnout Definition and Attributes

The term burnout was first coined in the 1970s by Freudenberger to describe the gradual emotional depletion and loss of motivation he observed among people who had volunteered to work for aid organizations (Bakker, Demerouti, & Sanz-Vergel, 2014; Freudenberger, 1974). The volunteers had worked with dedication and enthusiasm for a period of time before the onset of these symptoms. On the basis of his observations, Freudenberger (1974) defined burnout as "a state of mental and physical exhaustion caused by one's professional life." Thus, individuals who burn out from their work deplete their energetic resources and lose their dedication to work.

At the same time, Maslach (2001) and her collaborators interviewed human-services workers to find out how they were coping with client-related stressors (Maslach & Jackson, 1981). The human-services workers used the term burnout and indicated that they experienced feelings of exhaustion. They had developed negative attitudes toward their clients, and frequently felt that they lacked the professional competence needed to help their clients (Schaufeli, Bakker, et al., 2009). As an outcome of the interviews, Maslach and Jackson (1981) defined burnout as a syndrome characterized by emotional exhaustion, depersonalization, and a lack of personal accomplishment.

Emotional exhaustion refers to feelings of being emotionally drained by contact with other people, and it is the main strain dimension of burnout. Depersonalization refers to a negative or excessively detached or disengaged response toward the people who are the recipients of one's service or care. Finally, reduced personal accomplishment refers to a decline in one's feelings of competence and successful achievement at work (Maslach & Jackson, 1981; Maslach & Leiter, 2008).

Although research has confirmed that burnout is a slow process of progressive loss of energy and enthusiasm (Alarcon, 2011; Demerouti & Bakker, 2008; Maslach & Leiter, 2008; Maslach & Leiter, 2016), the notion that burnout is exclusively found in the human-services area has been rejected, and researchers now have adapted these first conceptualizations of burnout to make it applicable to workers in various occupations, including information technology (Demerouti & Bakker, 2008; Ferratt, et al., 2005; Moore, 2000a, 2000b; Weinert, et al., 2015).

The burnout models discussed in this chapter are shown in Table 1.

Table 1. Burnout Models

Burnout Model Name	Model Description
Conservation of Resources	The conservation of resources (COR) model of burnout proposes that stress and burnout occur when workers perceive a threat to that which they value (resources) (Hobfoll, 2002). That threat may come from work-related demands, the loss of work-related resources (such as unemployment) or the insufficient return of resources following an investment of resources.
Areas of Worklife	This model frames job stressors in terms of person-job imbalances and identifies six areas in which these imbalances take place. The areas are: workload, control, reward, community, fairness and values (Leiter & Maslach, 1999).
Maslach's Three-Dimensional Model of Burnout	This burnout model contends that the three key dimensions of burnout are emotional exhaustion, depersonalization, and reduced personal accomplishment (Maslach, 1982).
Job Demands-Resources	This process model of burnout asserts that burnout occurs when individuals experience incessant job demands and have inadequate resources available to address and reduce demands (Demerouti et al. (2001).

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Discussion of the Burnout Models

More recently conceptual models have expanded on theories about job stress, and the notion of imbalances leading to strain. Two developmental models of the demands-resources imbalance are the JD-R model and the Conservation of Resources (COR) model (Halbesleben & Buckley, 2004). The JD-R model focuses on the idea that burnout arises when individuals experience incessant job demands and have inadequate resources available to address and to reduce those demands.

Conservation of Resources Model of Burnout

The conservation of resources (COR) model of burnout follows a basic motivational theory assuming that burnout arises as a result of persistent threats to available resources (Demerouti et al., 2001). When individuals perceive that the resources they value are threatened, they strive to maintain those resources. The loss of resources or even the impending loss of resources may aggravate burnout. The COR model of burnout proposes that stress and burnout occur when workers perceive a threat to that which they value (resources) (Hobfoll, 2002). That threat may come from work-related demands, the loss of work-related resources (such as unemployment) or the insufficient return of resources following an investment of resources (for example, if an employee spends a great deal of time assisting a coworker without any return favor from that coworker). The initial threat to resources is seen as a stressor; however the continued loss or threat to resources, particularly after a great deal of resource investment in work, is said to lead to burnout (Halbesleben & Buckley, 2004; Hobfoll, 1989, 2002). In this way, the COR model extends beyond the notion of stress to increase understanding of how chronic stress develops into burnout (Halbesleben & Buckley, 2004).

A variety of other studies have used the COR framework and found empirical support for the model (Brotheridge & Lee, 2002; Halbesleben & Demerouti, 2005). For example, Halbesleben and Bowler's (2007) study highlights an important strength of the COR model. By specifying the process underlying the investment of resources (that is, when resources become depleted, workers are more careful about the investment of those resources), the COR model provides insights into how burnout leads to such consequences as lower job performance and decreased organizational commitment (Halbesleben & Demerouti, 2005). Grandey and Cropanzano (1999) are among the first researchers to expand COR beyond work roles to examine work-family conflict (WFC). COR theory proposes that "inter-role conflict leads to stress because resources are lost in the process of juggling both work and family roles" (Hobfoll, 1989, p. 352). Moreover, COR allows for predictions about the moderating relationship of individual differences (e.g., self-esteem, positive affectivity, internal and locus of control), which may be viewed as resources. Another study that built on the COR model of burnout is the Areas of Worklife model of burnout.

Areas of Worklife Model of Burnout

A different variation of an imbalance model of burnout is the Areas of Worklife (AW) model, which frames job stressors in terms of person-job imbalances, or mismatches, and identifies six key areas in which these imbalances take place: workload, control, reward, community, fairness, and values (Maslach & Leiter, 1999). Mismatches in these areas affect an individual's level of experienced burnout, which in turn determines various outcomes, such as job performance, social behaviors, and personal well-being. The greater the mismatch between the person and the job, the greater the likelihood of burnout; con-

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versely the greater the match, the greater the likelihood of engagement. Initial empirical support for the AW model has been provided by both cross-sectional and longitudinal studies (Maslach & Leiter, 1999).

Maslach's Three-Dimensional Model of Burnout

The most influential work on burnout was conducted by Maslach and her colleagues in the 1970s (Halbesleben & Demerouti, 2005; Schaufeli, Leiter, et al., 2009). As a result of her research, she found that the three key dimensions of burnout are emotional exhaustion, depersonalization, and reduced personal accomplishment (Maslach, 1982). Emotional exhaustion refers to feelings of being overextended and depleted of one's emotional and physical resources. Depersonalization refers to a negative, callous, or excessively detached response to a variety of aspects of the job. Reduced personal accomplishment refers to a decrease in feelings of competence or productivity at work (Demerouti, et al., 2001; Halbesleben & Demerouti, 2005; Schaufeli, Leiter, et al., 2009).

The significance of this three-dimensional model is that it clearly places the individual strain experience within the social context of the workplace and involves the person's conception of both self and others (Maslach, 2003; Maslach & Leiter, 2008).

Job Demands-Resources Model of Burnout

Demerouti et al.'s (2001) JD-R model is a revised conceptualization of job burnout that extends beyond human services workers into the corporate environment. Their model proposes that burnout is a process in which exhaustion and disengagement are separate but correlated factors that are invariant across sample work populations in different types of occupations (Demerouti, et al., 2001). In the JD-R model, burnout develops when job demands are high and job resources are limited. Job resources refer to those physical, social, or organizational aspects of the job that may: (1) reduce job demands and the associated physiological and psychological costs; (2) be functional in achieving work goals; or (3) stimulate personal growth, learning, and development and are negatively related to burnout (Bakker, Demerouti, & Verbeke, 2004; Bakker, et al., 2007). Job resources either play an intrinsic motivational role because they foster employees' growth, learning, and development, or they play an extrinsic motivational role because they are instrumental in achieving work goals. Job demands require effort and are associated with psychological costs, like burnout (Demerouti, et al., 2001; Halbesleben & Buckley, 2004). In short, job demands predict work exhaustion and job resources predict disengagement (Halbesleben & Buckley, 2004).

The JD-R model is shown in Figure 2.

In the JD-R process model of burnout, burnout has two key dimensions: (1) exhaustion, which resembles traditional stress reactions that are studied in occupational stress research such as fatigue, job related stress and anxiety and attitudinal and behavioral outcomes such as turnover intention and absenteeism and (2) disengagement which is described as a "specific kind of withdrawal or mental distancing from recipients…which may manifest itself as alienation, disengagement or cynicism concerning the job and the work role" (Demerouti, et al., 2001, p. 500). Table 2 describes the two dimensions of burnout as conceptualized by Demerouti et al. (2001).

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Figure 2. Job Demands-Resources Model of Burnout (Schaufeli & Salanova, 2014)

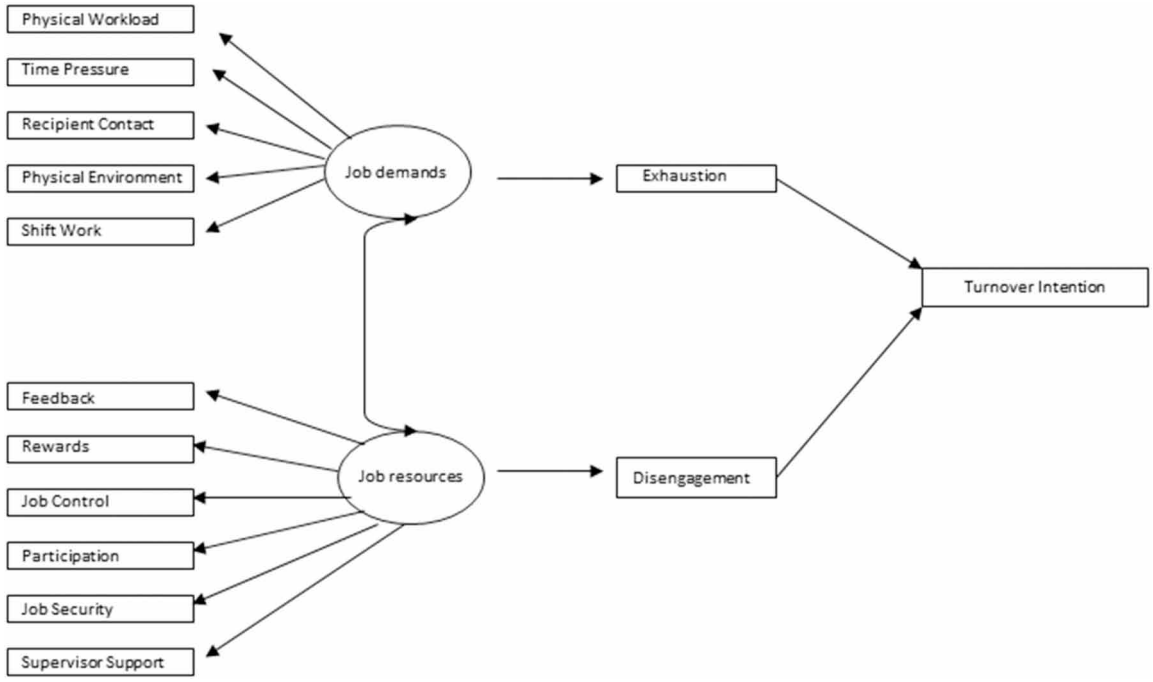

Table 2. Demerouti et al.'s two-dimensional burnout model

Burnout Dimension	Description
Exhaustion	This component refers to general feelings of emptiness, overtaxing from work and a strong need for rest and a state of physical exhaustion (Demerouti et al, 2001).
Disengagement	This component refers to "distancing one's self from the object and content of one's work and to negative, cynical attitudes and behaviors towards one's work in general" (Demerouti et al, 2001, p. 503).

The Oldenburg Burnout Inventory (OLBI) was created by Demerouti et al. (2001) and can be used in virtually every occupational context. This instrument overcomes a major psychometric shortcoming of the Maslach Burnout Inventory (MBI) and the MBI-GS, namely, the one-sided wording of the items (Demerouti & Bakker, 2008). The OLBI includes two dimensions: work exhaustion and disengagement. Work exhaustion is defined as a consequence of intensive physical, affective, and cognitive strain as a long-term consequence of prolonged exposure to certain demands. The OLBI covers not only affective, but physical and cognitive aspects of work exhaustion. This makes it more applicable to those workers who perform physical work and to those whose job is mainly about processing information, especially because there is something more related to feelings of exhaustion than just emotions—even in the service sector (Demerouti, et al., 2001). Over two decades of research on burnout have identified a plethora of organizational risk factors across many occupations in various countries (Maslach, et al., 2001). Six key domains have been identified as mentioned earlier: workload, control, reward, community, fairness sand values. The first two are in the JD-R model.

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Indeed, for many IT professionals, interaction with software and hardware is more central to their work than interaction with other people (Pawlowski, Kaganer, & Cater III, 2004). Therefore, in the case of burnout in IT professionals, researchers emphasize that it is unwise to draw upon the burnout literature without first gaining a better understanding of burnout as it is understood and experienced specifically within the IT context (Pawlowski, et al., 2004). Additionally, more recent studies contend that IT environments are so complex that there are many other factors that potentially influence burnout, turnover intentions and turnover.

Employee Engagement as the Positive Antithesis to Burnout

An important development, at the beginning of the 21st century, has been that researchers have tried to broaden their understanding of burnout by expanding their attention to include its positive antithesis. This positive state has been identified as "engagement". Employee engagement is a key business driver for organizational success, is a complex concept and is influenced by many factors in the organization, such as culture, communication, and leadership (Kumar & Pansari, 2015; Maslach & Leiter, 2016). More importantly, research has suggested that engaged employees are more likely to be productive, remain with their current employer and interact positively with customers (Chalofsky & Krishna, 2009; Saks, 2006).

Although there is general agreement that engagement with work represents a productive and fulfilling state within the occupational domain, there are differences in its definition (Maslach & Leiter, 2016). For some researchers, engagement is considered to be the opposite of burnout and is defined in terms of the same three dimensions, but the positive end of those dimensions rather than the negative. By implication, engagement is assessed by the opposite pattern of scores on the three MBI dimensions (Maslach & Leiter, 2016). From this perspective, engagement consists of a state of high energy, strong involvement, and a sense of efficacy (Maslach & Leiter, 1999). In another definition, engagement is defined as the cognitive, emotional, and behavioral energy an employee directs toward positive organizational outcomes (Shuck & Reio, 2014). In yet another study, work engagement is a persistent, positive affective-motivational state of fulfillment that is characterized by the three components of vigor, dedication, and absorption (Bakker & Schaufeli, 2008). In this view, work engagement is an independent and distinct concept, which is not the opposite of burnout although it is negatively related to it (Maslach & Leiter, 2016). The Utrecht Work Engagement Scale (UWES) was developed to assess this positive state, and extensive research has been carried out in the last decade (Bakker & Schaufeli, 2008).

Since the turn of the century, work engagement has emerged as the opposite of burnout, namely a state of mental energy (Schaufeli & Salanova, 2014). From a scientific point of view, the emergence of work engagement has been fostered by the rise of positive psychology, which studies human strength and optimal functioning (Harju, Hakanen, & Schaufeli, 2016; Pfeffer, 2009; Schaufeli & Salanova, 2014). The intention of the positivist approach is to re-direct the focus of the traditional psychology field towards the building of positive qualities and valued subjective experiences reflected in the individual's experiences of well-being, contentment, and gratification (with the past), hope and optimism (for the future), and flow and happiness (during the present) (Van Heerden, 2015). Like burnout, engagement was first used in practice in business settings by human resources professionals and consultants because an organization's mental capital, that is, the cognitive and emotional fortitude and strength of its employees, is of increasing economic significance (Van Heerden, 2015). For modern organizations, employees' mental fitness rather than their mere physical fitness provides a decisive competitive advantage (Rothmann, 2008; Schaufeli & Salanova, 2014).

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Employee Engagement and Work-Related Well-Being

Whereas research on burnout has produced thousands of articles during the past three decades, research on employee engagement has recently started to take shape. Because modern organizations expect their employees to be proactive and show initiative, take responsibility for their own professional development, and be committed to high quality performance standards, it only makes sense that the focus on engagement is growing. In the engagement literature, researchers continue to confirm that engagement also can make a real difference for employees and may offer organizations a competitive advantage (Bakker & Schaufeli, 2008). Overall, research has reliably demonstrated that organizations will positively benefit from the development of high levels of employee engagement. Thus, engagement is good for the organization (Shuck & Reio, 2014). The emotional well-being of employees and their satisfaction with their work and workplace affect citizenship at work, turnover and performance (J.K. Harter, Schmidt, & Hayes, 2002).

One area where employee engagement has been studied is as an aspect of work-related well-being. Work-related well-being comprises how employees feel at work (Schaufeli & Salanova, 2014). A greater part of the literature on well-being at work asserts that it is an affective state in which positive feelings occur more frequently than negative ones (Diener, 1999; Taris & Schaufeli, 2015). Further, well-being at work is partially a function of helping employees do what is right for them by allowing them to implement behaviors that positively influence engagement and other positive emotions at work (Harter, et al., 2002). In fact, according to Schaufeli (2012), a promising area of immediate exploration is the identification of the central components within a workplace climate that foster the development of engagement and stimulate well-being. However, engaging employees is just one part of the story. Improving well-being at work implies a more well-rounded approach which focuses on enabling employees to maximize their personal resources (in particular, with regard to creating a healthy work-life balance); creating an organizational structure that enables employees to flourish and take pride in what they do; supporting people to function to the best of their abilities, both as individuals and in collaboration with their colleagues; and producing a positive overall experience of work (Jeffrey, Mahony, Michaelson, & Abdallah, 2014)

Work-related well-being is conceptually grounded in the burnout literature (Maslach & Leiter, 1997; Maslach, et al., 2001; Shuck & Reio, 2014). Iverson et al. (1998) provided a research-based model of individually focused domains of well-being that include the variables of emotional exhaustion, depersonalization, and personal accomplishment. In their well-being model, the three domains represented individual, separate states of well-being rather than subcomponents of a three-component model. As part of their research, Iverson et al. (1998) suggested that employees who experienced negative psychological climates at work were more likely to report higher levels of exhaustion and depersonalization, while those who experienced positive climates reported higher levels of personal accomplishment. For example, employees who experience negative emotions as a result of their work, such as a lack of peer or managerial support, or feeling that their work is taken for granted, are far less likely to experience positive emotion (Shuck & Reio, 2014). These experiences at work are likely to influence a person's sense of psychological well-being (Shuck & Reio, 2014).

This section focused on how an employee's experience of work can positively or negatively affect their well-being. The need for new research on IT turnover has been called for, but much of the literature continues to conduct similar studies using the same search categories, and finding similar results (Lo, 2015).

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RECONCEPTUALIZING THE MODEL ON JOB BURNOUT AND TURNOVER INTENTIONS: A HOLISTIC APPROACH

The study of well-being suggests that organizations are interested in it because of its impact on organizational outcomes, such as job satisfaction, engagement, organizational commitment and turnover intentions (Rothmann, 2008; Shuck & Reio, 2014). In fact, workplace well-being has been recognized as a fundamental characteristic of successful organizations, contributing to desirable results such as retention and increased performance (Harter, et al., 2002). Additionally, employees' expectations about the workplace are expanding, with many people looking for work that provides opportunities for personal development, fulfillment and well-being (Harter, et al., 2002; Jeffrey, et al., 2014; May, Gilson, & Harter, 2004). Employees are increasingly seeking to get meaning, happiness, and social connections from their work in addition to professional learning and development (Harter, 2008).

Job satisfaction, occupational stress, burnout and work engagement are all important dimensions of the psychological work-related well-being of employees (Wright & Cropanzano, 2000). Well-being could be thought of in terms of different life roles, such as marriage, family, work and housing. Work represents an important context for studying the well-being of individuals, especially because work provides a source of income that impact on various life roles, and because it demands a significant part of an individual's time and energy (Rothmann, 2008). Work also ranks high among the determinants of life satisfaction (Schaufeli & Salanova, 2014). Unfortunately, work-related well-being has frequently been narrowly operationalized as job satisfaction (Rothmann, 2008).

Work-related well-being is of interest because of the practical and scientific interest in employee feelings at work (Schaufeli & Salanova, 2014). Historically the interest in employee feelings was solely intertwined with stress and was often defined as a physical, mental or emotional response to events or demands that cause bodily or mental tension (Maslach & Leiter, 2016). Repeatedly, studies have shown that job stress is an important factor in an employee's overall commitment, job satisfaction and decision to leave their job (Sethi, Barrier, & King, 1999). And, the research has demonstrated time and again that the organization's environment influences the psychological well-being of its employees and, as a result, the health of the organization (Vivian & Hormann, 2015). The introduction of well-being into the conversation about work expands the discussion of work to include employees' emotions. And emotions are a topic that employees are often encouraged to stay away from while at work.

Well-being also plays a central role in creating thriving societies and focusing on well-being at work presents a valuable opportunity to benefit societies by helping workers to feel happy, competent, and satisfied in their roles (Jeffrey, et al., 2014). The evidence also shows that people who achieve good standards of well-being at work are likely to be more creative, more loyal, more productive, and provide better customer satisfaction than individuals with poor standards of well-being at work (Chalofsky & Krishna, 2009; Jeffrey, et al., 2014). For decades, organizations have tried to foster these qualities through employee engagement strategies; however, the evidence demonstrates that engaging employees is just one part of the story (Jeffrey, et al., 2014). Improving well-being at work requires a more holistic approach, which focuses on helping employees to:

- Strengthen their personal resources.
- Flourish and take pride in their roles within the organization.
- Function to the best of their abilities, both as individuals and in collaboration with their colleagues.
- Have a positive overall experience of work.

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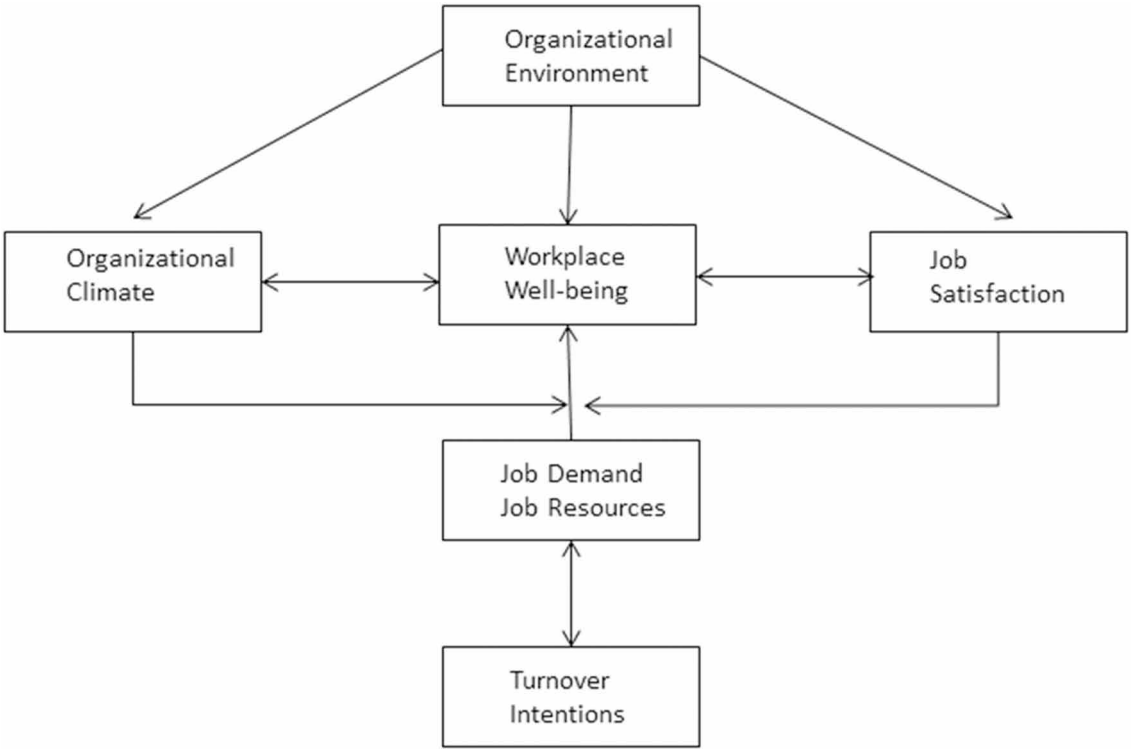
Figure 3 depicts a revised model of job burnout and turnover intentions. In the authors' prior study, the model's focus was solely on the dimensions of burnout and the relationship to turnover intentions. This new, revised model suggests that an individual's physical workplace, organizational climate and job satisfaction are all a critical part of their well-being at work. Thus, well-being is at the center of the model. As job demands and resources change, the employee's emotional state is affected as well.

Figure 3. Revised Model of Burnout and Turnover Intentions to Include Well-being



The value of research on employee well-being is that it takes a rounded view of an employee's work experience to create a state of well-being. Historically, employees have been told that feelings and emotions have no place in the workplace. However, new and growing research supports the notion that people have feelings about work at work, and that these feelings matter because they affect psychological well-being (Maslach & Leiter, 2016; Schaufeli & Salanova, 2014). Hence, issues of well-being have never been more important than they are today (Wright & Cropanzano, 2000). Up until now, the literature has largely ignored taking a holistic view and approach. Burnout and engagement researchers should focus on linking these concepts in the context of a extending the conceptualization of well-being. In Kahn's (1990) seminal work, he talks about bringing the whole self to work. If this is true, then a holistic model is what is required to advance the research—looking at the whole person at work—including emotions.

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FUTURE RESEARCH DIRECTIONS

The research discussed in this chapter demonstrates that quite a bit is known about the standalone concepts of burnout and its dimensions, turnover intentions, and turnover. Since burnout and engagement may have significant consequences for individual employees and organizations, many studies have focused on the antecedents of both concepts. Which conditions in the work environment should be targeted to prevent burnout and encourage engagement? Why are some employees prone to burnout or engagement more than others? Which of these states trigger turnover intentions and possibly turnover? These are all interesting questions for new research.

Future research also should seek to validate the revised framework in this chapter and further understanding of turnover intentions, turnover and their relationship to work-related well-being. Research on turnover as an unintended consequence of seemingly positive organizational life is another interesting research direction. The authors' future research aims to explore work-related well-being in this extended framework and how leadership might facilitate and influence work-related well-being.

Leadership is viewed as one of the "single biggest factors contributing to employee perceptions in the workplace and workforce engagement" (Wang & Walumbwa, 2007, p. 399), which makes it a potentially influential moderator of the relationship between time demands and employees' well-being. Accordingly, Bakker and Demerouti (2007) summarize studies showing that the quality of the relationship with one's leader, leaders' appreciation, support, or effective feedback may act as moderators between high job demands and employees' well-being. Building on these considerations, the authors propose that specifically leadership style is a potential moderator variable that warrants further study.

The authors also included trends and issues that are facing IT professionals in the current work environment in this chapter. One example is the issue of how to address the loss of knowledge that occurs when workers retire is a pressing one that deserves further study. Another interesting question for research is how to address the ubiquitous nature of technology. With all of the convenience that technology access has brought, unintended and often counterproductive consequences have emerged. New and interesting insights will be gained from exploring these consequences and their relationship to burnout, engagement, turnover and overall employee well-being. The fear of becoming obsolete is a real issue for IT professionals. The pace of technology change is making it difficult for IT workers to bridge the skills gap and remain competitive. Future research could identify new and creative strategies for addressing the skills gap.

A final research area is a question about the uniqueness of IT professionals. Lo (2015) asked the question and the authors agree that it is a valid one regarding whether IT workers really are unique. And if they are, in what aspects are they different from other knowledge workers? Future research is needed to confirm whether IT professionals are truly unique and if so, how will approaches to improve IT retention rates be different?

CONCLUSION AND RECOMMENDATIONS

The focus in this chapter was examining two components of well-being: employee engagement and burnout and their relationship to turnover intentions and turnover. Based on the literature, burnout is an important concept because it predicts significant outcomes like turnover and turnover intentions for employees and organizations. On the other hand, research has linked employee engagement to higher

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rates of profitably, growth, increased staff performance, decreased staff turnover, and improved well-being, and is considered to be an important business driver for organizational success (Rothmann, 2008; Schaufeli & Salanova, 2014; Wright & Cropanzano, 2000). A significant finding in the research is that in workplaces that are set up to nurture well-being, people tend to be more creative, more loyal, more productive and generally perform better (Jeffrey, et al., 2014).

The studies examining IT turnover have helped to cultivate this research stream. This chapter's review of the literature shows that some areas of research have matured, but other domains have yet to be explored. Key findings from the research on turnover and the turnover intentions of IT professionals assert that variables, such as job satisfaction, organizational commitment, and role stress are among the factors that cause IT professionals to leave their organizations (B. L. P. Chang, 2002; C. L. Chang, 2010). Moore (2000a) contends, however that many more factors, some that are related to the work environment and some that are related to the individual, influence an employee's commitment to the organization, and satisfaction with his or her job. Moore's study was completed nearly two decades ago, but the predictions are even more relevant today.

Recommendations

The present research also has a number of important implications for practice. As organizations become more complex and global, and demands on workers increase, fostering employee well-being could help to alleviate IT turnover by addressing key affective aspects of work life. Employees feel different at work, and these feelings matter. In this chapter, three aspects of employee well-being were discussed: burnout, exhaustion and engagement. These symptoms, which can be seen as psychological responses to overstimulation at work, represent the inability and the unwillingness to expend effort, respectively (Schaufeli & Salanova, 2014). Burnout and exhaustion are two negative patterns of employee well-being at work. What preventive strategies can organizations use to prevent burnout, curb turnover and improve well-being at work?

Robak (2013) stressed that in order to appropriately address turnover, organizational leaders must learn to face the truth about it. First, not all employees who leave an organization are unsatisfied. Some employees will leave because of low morale or due to any number of reasons (Robak, 2013). Others will move away, quit because of family concerns, change professions, even start a business of their own or retire (Robak 2013). So, staying vigilant and focused on employees is a way to stay in touch with what is happening with staff and understanding when organizational interventions are necessary. In any case, retention strategies that organizational leaders implement should focus on addressing issues that are within their control. These strategies include opportunities for promotion, creating a flexible work environment and competitive compensation. Other things that may be put in place to assist with employee retention are ongoing training/education/exploration to allow IT workers to keep up with current technologies. Additionally, interactions between IT workers and leadership may impact turnover.

Another reason employees might leave their jobs is to take jobs that allow them to reduce their commute or to work at home. Hence, one recommendation is to enact policies that allow opportunities for employees to take advantage of flexibility through telework. Additionally, providing individuals with regular opportunities to talk about their preferences about working hours with their managers and regular assessment of how working hours fit with individuals' home lives may present a sensible way to nurture well-being through work-life balance (Chen & Karahanna, 2014; Jeffrey, et al., 2014; Reyt & Weisenfeld, 2015). Having an appropriate work-life balance is extremely important when attempting to foster well-

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being at work. Employees who feel they have achieved this balance are shown to feel less stressed, and are likely to feel more satisfied at work, which suggests that getting the work-life balance right is likely to reduce stress and increase positive attributes, such as creativity and productivity (Jeffrey, et al., 2014).

From a global perspective, knowledge workers and IT professionals have become accustomed to new ways of working, playing, and communicating. Mobile devices and applications allow people to be alerted for every incoming phone call, text message, instant message, email, calendar event, status update notification from social networking sites like Twitter and Facebook, breaking news, and so on (Reyt & Weisenfeld, 2015). As a result, technologies create an ongoing stream of disruptions. To deal with burnout and work exhaustion due to the 24x7 connectedness, a strategy that organizations can implement includes safeguarding the boundaries between home and work by making sure that as much as possible employees are encouraged to disconnect after working hours.

A strategy for addressing the fear of obsolescence is to institute methods for improving job security via job design. Research shows that job security is also an important variable in employee well-being in terms of job design. Studies completed throughout the last three decades demonstrate that job insecurity – specifically the prospect of job loss – is associated with reduced overall and job-related well-being, even after controlling for job-related and personal factors (Jeffrey, et al., 2014). Minimizing job insecurity wherever possible is a key recommendation. Also, providing clearly defined job roles and expectations that are discussed and formalized can help in this area. In cases when ensuring job security is not possible, being transparent in communications with staff is important. Doing so will allow employees whose jobs are at risk to plan for the future.

The workplace is constantly changing and organizational leaders must rise to the challenge to ensure that employees fare well. In this chapter, the authors discussed the burnout process, work exhaustion, work-related well-being, current technology issues in the IT context, and preventing or alleviating IT turnover. Finding the balance of scientific rigor and practical application is essential for maintaining the active participation of employees and organizational leaders necessary to gain a greater understanding of these phenomena and an ability to deal effectively with them. As a final note, the authors contend that workplace well-being is a good thing. It is good for IT professionals—the group of interest in this chapter. Hence, IT professionals, their families, communities, and organizations can benefit from improved well-being and as an outcome reduced turnover rates. Additionally, it is the hope of the authors that organizational leaders take the notion of well-being to heart and become inspired to find innovative ways to nurture their employees' well-being as part of the effort to retain them.

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KEY TERMS AND DEFINITIONS

Employee Engagement: Refers to the extent to which employees feel enthusiastic about their work, are committed to the organization, and put forth discretionary effort as it relates to their work.

Information Technology Professionals: Workers in a technology services organization, whether it is a standalone organization or an internal department.

Job Burnout: Burnout is a psychological syndrome that results from prolonged exposure to stressors in the workplace.

Job Demands: Aspects of a job that require continuous physical or emotional effort. Examples of demands are workload, job pressures, and emotional demands.

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Job Resources: The tools, materials, and other assets that an employee can draw on at work. Examples of resources include management and peer support, training, and so on.

Turnover: The voluntary termination of employment from an organization.

Turnover Intention: Turnover intention refers to an employee's deliberate and conscious goal to look for a new job or to leave a current job.

Workplace Wellbeing: Wellbeing refers to all aspects of work life, including how employees feel about their work, their work environment, and the absence of chronic job stress and strain.

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Chapter 89
Innovation Through Diversity and Inclusion:
A Roadmap for Higher Education Information Technology Leaders

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ABSTRACT

IT leadership involves technology, but it is mostly about people. This chapter discusses how organizational diversity has a critical impact on innovation and the role of leaders to create an environment where everybody feels a sense of belonging and where all kinds of people can flourish through safety, awareness, hiring, mindsets, and listening. Leaders are sometimes unsure how to achieve a more inclusive culture. This chapter provides research, definitions, details, and actionable recommendations for change so that leaders can create an organization where diverse employees can thrive and innovate for the benefit of the university and its community.

INTRODUCTION

University employees help create the next generation of innovators, researchers, and explorers. However, not all departments have the same focus. Higher education information technology (IT) has historically been focused on operational excellence, efficiency, and "doing more with less" while often leaving activities related to exploration and innovation to researchers and academic departments.

But just as universities as a business model start to struggle (Fain, 2017), IT is starting to reinvent itself to become a strategic partner (Gates & Cheverie, 2017). Ubiquitous, easy-to-use, and quickly changing consumer technology raises expectations of students, faculty, and staff regarding technology

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services offered by the university. The struggle for IT leaders is how to deliver innovative solutions, help the university navigate change, and meet rising expectations in the context of dwindling budgets and declining enrollment.

This chapter will focus on the ways diversity can contribute to innovation, and examine the particular role that IT leadership plays in making these departmental culture efforts toward innovation, with recommendations on how to start creating and sustaining positive organizational diversity in an IT department. First, some background on diversity and inclusion will be explored; second, detailed information about psychological safety and growth mindsets as they relate to innovation; and lastly, the role of IT leadership in creating an inclusive environment in which innovation can thrive. Most of the existing literature tends to be applicable to a variety of industries, without particular focus on universities. In this chapter the authors present the available research and contextualize it for IT leaders in higher education.

BACKGROUND LITERATURE

Analysis of existing literature on the relation between diversity and innovation shows that while the topic seems particularly popular right now, it has been studied for decades. Diversity proponents defend that more innovative outcomes are achieved through heterogeneous teams incorporating varying points of view. Skeptics of that theory argue that the link between diversity and innovation is not strong enough and that diversity decreases efficiency through an increase in social tension (Mannix & Neale, 2005). To better understand diversity, one must understand the different types (gender, race, age, among many others), how a range of diverse individuals contribute to the group, and how diversity and team environments affect one another.

While there is little research on diversity and its impact on innovation in higher education IT, the following literature review covers research on diversity, innovation, and culture, which the authors connect to IT leaders in higher education.

Types of Diversity

The term *diversity* encompasses a variety of types such as age, ethnicity, gender, cognitive and thinking styles, veteran status, and others (Allegis Group, 2018). These different types of diversity have been grouped in many ways, such as inherent and acquired diversity (Hewlett, Marshall, & Sherbin, 2013); informational, demographic, and diversity in goals and values (Stanford, 1999); and demographic, experiential, and cognitive diversity (de Anca & Aragón, 2018). Similarly to the latter, Gartner groups them in three dimensions of diversity: Legacy, Experiential, and Thought (Logan & Rozwell, 2016). Legacy Diversity is what is traditionally thought of when the word "diversity" is used; these are physical characteristics such as race, gender, LGBTQ+ status, physical or mental disability, et cetera. Legacy Diversity is generally visible and static. Experiential Diversity is comprised of experiences one has in life and includes social identity and behavior, such as job experiences, relationships, and education. Lastly, Thought Diversity looks down to the neurophysiological level, including cognitive styles, emotions, and personality. A diverse range of employees in all of these categories is important to experience the breadth of people, cultures, experiences, and ways of thinking.

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EDUCAUSE's 2016 publication, *The Higher Education IT Workforce Landscape* (Pomerantz & Brooks, 2016), investigates higher education IT demographics. Of note, women make up 40% of the IT staff, 30% of the managers, and only 27% of the CIOs; each of these levels hovers around 85% white (in contrast to the US workforce, 66% white).

Diversity and Organizational Performance

Not just a moral imperative, diversity is a boon to organizations. Diverse organizations are smarter, have better financial returns, higher accuracy, more objectivity, more innovation, and make better decisions (Rock & Grant, 2016). They communicate better (Logan & Rozwell, 2016), understand their customers better (Logan & Rozwell, 2016), have higher commitment among employees in marginalized groups (DelCampo, Rogers, & Jacobson, 2010), and in general have higher performance (Morgan, 2017). Additionally, as the understanding of equity and inclusion issues grows, so does the reputation of organizations that support it; in order to attract and retain top talent, organizations in technology and higher education must commit to supporting diversity (Egen, 2011; Logan & Rozwell, 2016).

Diversity and Team Performance

The effects of diversity on team performance have been studied from multiple angles such as cultural background (Stahl, Maznevski, Voigt, & Jonsen, 2009), different age segments, and genders (Mannix & Neale, 2005). While the results of differences in performance are mixed, the approaches to research help uncover many relevant aspects of the relation between diversity and team performance.

A more optimistic view, inspired by Hoffman's work in the 1960s, suggests that diverse teams benefit from a broader range of backgrounds and perspectives than homogeneous teams (Mannix & Neale, 2005). Therefore, for tasks with high levels of uncertainty, with changing requirements and unclear outcomes - what Edmondson (2016) describes as "wicked problems" - diverse groups are more able to come up with a variety of strategies, explore different approaches to the problem, and theoretically find a better solution.

On the other hand, the more pessimistic view suggests that diversity creates social divisions, often leading to cultural clashes and poor social integration, thus negatively impacting team performance. This can result in lower retention and lower team cohesion. However, it must be noted that more negative effects were observed in teams with diverse *age* range, while mixed results were observed in teams with diverse genders and races. Also relevant to the understanding of these results is the proportion of minority and majority constituents within a group - skewed groups in which minorities represent only 1% to 15% of the constituents perform worse than more balanced groups (Mannix & Neale, 2005).

Overall, the relation of team performance and diversity has a stronger correlation with the type of activity the teams are performing, rather than the type of diversity within the team. For example, homogeneous (similar) teams tend to perform better when the tasks are related to *exploitation* - activities that focus on convergent thinking, driving up efficiencies, improving on existing processes and knowledge, and with low levels of uncertainty. On the other hand, heterogenous (diverse) teams perform better when the tasks are related to *exploration* – activities related to divergent thinking, experimenting with unknown variables and solutions, and with high levels of uncertainty (O'Reilly & Tushman, 2004). See Table 1 for more examples on exploitative versus exploratory activities.

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Table 1. Comparison of exploitative and exploratory activities (Adapted from O'Reilly & Tushman, 2004, p. 80)

Exploitation	Exploration
Convergent thinking - aims to find the best solution to a given problem	Divergent thinking - aims to create many different solutions to a given problem
Emphasis on efficiency and cost optimization	Emphasis on growth and innovation
Low tolerance for risk and failure	Embraces risk with a high tolerance for failure
Activities related to production, execution	Activities related to experimenting, creating new possibilities
Tends to benefit from homogeneous teams	Tends to benefit from heterogeneous teams

EDUCAUSE explains that higher education IT's role is evolving to be interconnected, mission-focused, agile, and enabled by global technology trends including innovative advancements such as artificial intelligence and cloud computing (Steinour, Ravishanker, Basgen, Scozzafava, & Srinivas, 2018). These attributes, along with others which require innovation, require exploratory type activities, not just exploitative. As exploratory activities are enhanced by diverse teams, IT leaders must learn how to create and sustain diversity in their organizations to benefit the future of their departments and of the university. Simply relying on heterogeneous groups to self-organize and self-direct is not enough to leverage the power of diversity to increase innovation - leaders must take an active role to create a successful collaborative environment where diverse people can thrive, collaborate, and innovate.

Diversity and Innovation

Building on the idea of diversity and team performance, research shows that diversity also has a direct impact on innovation helping companies grow their market share and capture new markets (Hewlett, Marshall, & Sherbin, 2013), achieve better financial returns (Smith, 2017), create more patents (Locker, 2018), increase creativity and improve performance (Forbes Technology Council, 2018), and build resilience and adaptiveness, thus empowering their organizations "to survive and thrive when confronted with unknown and unknowable factors" (Tsusaka, Reeves, Hurder, & Harnoss, 2017).

While most of the research on innovation is focused on S&P 500 type companies, there is growing interest in the subject from leaders in higher education (Aldridge, 2018), particularly IT leaders in higher education (Burrell, 2018). According to EDUCAUSE, 88% of higher education leaders surveyed felt their institution needed to innovate, but 51% do not know how to do it (Morris, 2015). This chapter argues that increasing diversity through intentional leadership and an inclusive culture is one important and often overlooked method to facilitate innovation, as diversity benefits innovation on both individual and organizational levels (Egan, 2011; Logan & Rozwell, 2016; Rock & Grant, 2016).

A report published by Forbes Insights (2011) details a morass of benefits that diversity has on innovation. Below are five of the key findings that relate to this chapter:

1. Diversity is a key driver of innovation and is a critical component of being successful on a global scale.
2. A diverse and inclusive workforce is crucial for companies that want to attract and retain top talent.
3. Nearly all respondents reported that their companies have diversity and inclusion strategies in place.

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4. Responsibility for the success of a company's diversity/inclusion efforts lies with senior management.
5. Significant progress has been made to build and retain diverse workforces, but there are still some impediments to companies' efforts.

If 51% of leaders don't know how to innovate, then what are the next steps? Many industry leaders concur that leaders should ensure they are never the smartest in the room, and that they should empower staff to be creative and challenge other ideas (Morgan, 2018). Maybe the question to IT leaders in higher education is not how they themselves should be more innovative, but how to create an environment that fosters innovation from their staff. For that, organizational culture is essential.

The Importance of Organizational Culture

Kochan et al. (2003) present research findings which support that organizational context is essential in determining the effect of diversity on teams. Some of the context variables analyzed were: business strategies (i.e., growth, stability, and customer-oriented), culture (i.e., people or competition orientation), and HR practices (i.e., diversity-focused trainings). The results show that racial diversity was found to negatively impact teams operating in competitive organizational cultures. However, the results also show that these negative impacts can be mitigated by trainings and career development initiatives focused on diversity and inclusion. Furthermore, when the organization emphasizes learning from diversity, the effect is the opposite, with diversity positively impacting team performance. As a consequence, organizations that approach diversity with intentionality and mindfulness and by providing adequate training and environments tend to outperform those that do not.

As discussed above, an explorative culture will favor innovation while an exploitative one will be cost- and efficiency-focused (O'Reilly & Tushman, 2004). In a field of increased competition for shrinking funding, being resource-focused seems like an unavoidable reality in higher education; this is particularly true for IT, a department that did not exist until a few decades ago and now demands significant resources for the daily operations of the university. However, being too cost-focused can lead to a scarcity mindset (passive, reactive, un-inspirational, powerless, and change-adverse), which leads to risk-avoidance (Mrig & Sanaghan, 2017). Instead of battling over resources, leaders should encourage innovation by adopting an opportunity mindset (Mrig & Sanaghan, 2017) and collaborate institution-wide (Burns, Crow, & Becker, 2015). These mindsets must be adopted by leadership and carefully managed to ensure they permeate the department's culture - otherwise, things will continue business-as-usual. IT leaders are paramount to encouraging a culture focused on people, not just technology or resources (Cheverie, 2017; Kelly & Kutch, 2017).

HIGHER EDUCATION IT INNOVATION THROUGH INCLUSIVE ORGANIZATIONAL CULTURE

Up to this point it seems clear that IT leaders in higher education must help create an inclusive organizational culture. As the authors explain below, two crucial aspects of this are psychological safety and growth mindset. Diversity cannot be an integral workplace value (nor provide its benefits) if employees do not feel that they can bring their personal selves to work or feel respected for their differences (Kutch,

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2017). Additionally, an environment with high risk tolerance, including a growth mindset and learning from failure, is essential for exploitation-focused activities that benefit innovation.

Feeling Personally Engaged and Safe to Be One's Self at Work

For innovative ideas to be put forth and grow, employees must feel personally engaged in the work and safe to speak up with new ideas. Kahn (1990) defines personal engagement as "behaviors by which people bring in or leave out their personal selves during work role performances" (p. 692). Employees who are personally engaged can express their "preferred self" in their workplace behaviors, which encourage connections to the work and to colleagues, and in fully performing their role. In an organization that has little diversity and an environment that encourages assimilation or groupthink, many "different" folks may not feel comfortable being their personal selves at work; on the other hand, an environment in which others can bring in their unique selves encourages personal engagement to thrive (see Table 2 for other advantages and disadvantages of high and low personal engagement, respectively). Figure 1 describes the components of this personal engagement: psychological meaningfulness, availability, and safety. While all three components are important, the authors will focus on psychological safety and how it encourages inclusion and innovation.

Table 2. Effects of high and low personal engagement (Adapted from Kahn, 1990)

Advantages of high personal engagement	Disadvantages of low personal engagement
Employees express themselves physically, cognitively, and emotionally during role performances.	Employees withdraw and defend themselves physically, cognitively, or emotionally during role performances.
People become physically involved in tasks, cognitively vigilant, and empathically connected to others.	Employees remove personal, internal energies from physical, cognitive, and emotional labors.
Leads to behaviors defined as effort, involvement, flow, mindfulness, and intrinsic motivation.	Leads to behaviors defined as automatic or robotic, burned out, apathetic or detached, or effortless.
Employees can express their real identity, thoughts, and feelings. This leads to personal voice, emotional expression, authenticity, non-defensive communication, playfulness, and ethical behavior.	Employees feel they must hide their true identity, thoughts, and feelings during their work. This leads to defensive, impersonal or emotionally inexpressive, bureaucratic, self-estranged, and closed behaviors.
Personally engaging means connecting one's self to the role in ways that display what one thinks and feels, one's creativity, beliefs and values, and personal connections to others.	Personally disengaging means uncoupling self from role and performing tasks at some distance from one's preferred self, which remains split off and hidden. Roles are performed as external scripts. Acting as custodians rather than innovators.

Psychological Safety Is Essential for Inclusion

One very important way to create a culture that supports "being different" is through psychological safety. While this term has many definitions, Gartner (Leow, Golluscio, & Mann, 2018) defines it as "making coworkers and team members feel that they will not be punished or humiliated when taking interpersonal risks, such as asking for help, admitting mistakes and vulnerabilities, or expressing concerns." These behaviors help others feel a sense of belonging and inclusion, whereas being rejected or mocked will cause feelings of exclusion.

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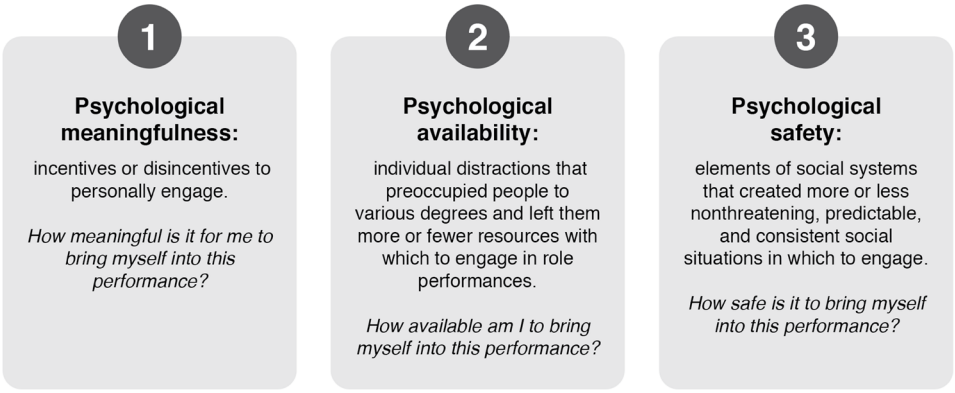
Figure 1. Components of personal engagement (Adapted from Kahn, 1990, p. 703)



What Does a Psychologically Safe Environment Look Like?

Psychological safety requires an environment where people can risk self-expression and engage "the processes of change" (Kahn, 1990, p. 708). A psychologically safe environment promotes trust; is predictable, consistent, clear, and nonthreatening; requires supportive and trusting interpersonal relationships; gives employees control over their work; and requires supportive managers who allow employees to try and fail without fear of repercussions (Kahn, 1990). "Safety is built on trust, respect, and being ready, able, and willing to connect. It is inviting people to open up, be authentic, because they are safe. They are accepted as they are. People believe that their peer's intentions are good and there is no need to be protective or careful around the group. They can venture beyond the narrow-minded protection of the Ego. The space is more 'we' than 'me'" (Bremer, 2018, Kindle Location 5155).

Table 3. Leadership behaviors affecting psychological safety (Adapted from Edmundson, 2004)

Encourages Psychological Safety	Discourages Psychological Safety
Available and approachable: Reduces perceived barriers to discussion.	**Authoritative or punitive:** Others feel that opinions are neither welcomed nor valued.
Inviting input: Others feel that opinion is respected; can also be a positive example of active participation.	**Input discouraged**: Others less likely to express their opinions, fearing potential negative consequences. Discouragement can be verbal or consist of more subtle behaviors.
Modeling openness and fallibility: Others are more comfortable admitting their own mistakes; reduces counterproductive barriers created by status differences.	**Taciturn, mistakes not admitted**: Indicates that certain matters are best not discussed; others will follow their example and not admit to mistakes.

How Does Psychological Safety Benefit Innovation in Higher Education IT?

Innovation challenges are common to many higher education IT organizations, which involve uncertainty and risk management; a few popular examples include modernization of the enterprise resource planning (ERP) system (Riddell & Eide, 2016), learning management system (LMS) (Pomerantz & Brooks, 2017), and disaster recovery (DR) solutions (Joch, 2016). How will the change in ERP affect

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downstream processes across all campus departments? How will an LMS migration impact integrations and instructors? Is the cloud an ideal DR solution for the institution? If so, which cloud platform should be used and how will the department manage the transition? These problems require a psychologically safe environment to work out better solutions when no single solution exists to satisfy every stakeholder.

Psychological safety is important for seeking help, spanning boundaries, seeking feedback, and speaking up about errors and concerns; it also leads to innovation by enabling risk-taking and a willingness to suggest new ideas without fear of embarrassment (Edmondson, 2004). By creating a psychologically safe environment, leaders are saying it is okay to create and fail, and must model that behavior themselves. An environment in which differences are seen as fertilizer for innovation encourages employees to have those differences. It reinforces that folks who may be different should still feel a sense of belonging and to thrive with their whole selves, instead of feeling like they should hide their differences. This suggests that if a team member who is part of an underrepresented group (of which there are many in higher education IT) has an idea, they will be more likely to share this idea if they feel psychologically safe (Pomerantz & Brooks, 2016). In fact, Grant and Sandberg (2016) in their book *Originals: How Non-Conformists Move the World* say that 85% of bold ideas are never mentioned due to embarrassment of failure or ridicule. If underrepresented and marginalized people are socialized from an early age to stay quiet and avoid a higher instance of doubt or skepticism due to their status, think of the incredible amount of ideas that are going unmentioned due to their status as a member of those groups. Recognizing this and creating a culture that encourages those folks to feel safe and speak up is the job of the CIO and/or other IT leaders in higher education (K. Kelly, personal communication, October 16, 2018).

Psychological safety is not only important for generating new ideas, but for adopting them as well. Old processes are often deeply ingrained into an organization and the muscle memories of its employees. Edmondson, Bohmer, and Pisano (2001) find that psychological safety fosters learning behavior in work teams. Technology implementation requires experimentation and seeking help, which involve interpersonal risk. A psychologically safe environment wherein well-intentioned interpersonal risks are not punished encourages people to voice concerns, ask questions, and experiment - all of which will support the collective learning process necessary for changing routinized behaviors.

Growth Mindset

Higher education is an environment of learning and growth, and psychological safety is an essential partner with Carol Dweck's (2006) extensive research and book on growth mindsets. Her research began with observing children's feelings about failure - they saw it not as a defeat, but a challenge and opportunity to learn and grow. She continues to investigate attitudes towards failure and growth, and explains two different types of thinking about failure. Someone with a fixed mindset may avoid challenges, give up easily, ignore constructive negative feedback, and even feel threatened by the success of others. On the other hand, someone with a growth mindset will embrace and persist in the face of challenges, accept and learn from constructive negative feedback, see effort as part of mastery, and find inspiration in others' success. An environment in which a growth mindset is encouraged is one that sees "failure" as an opportunity, not the typical discouragement that is all too common.

While higher education by nature tends to be risk averse and "slow to move beyond the status quo" (Aldridge, 2018), Mrig and Sanaghan (2017) state that risk tolerance, including some of Dweck's tenants of a growth mindset, is essential for innovation in higher ed. "Setbacks, failures, and mistakes will be

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inevitable and how our leaders deal with failures and learn from them will determine their effectiveness and their ability to move their institutions forward" (p. 15).

The EDUCAUSE list of Top 10 IT Issues for 2018 clearly shows the complexity that IT leaders in higher education face on a daily basis. Topics range from "Change Leadership" to "Data Management and Governance," all of which involve a multitude of (possibly conflicting) interests and points of view. In order to navigate such issues, a growth mindset approach is essential as no "out of the box" solution exists that will satisfy every single interested party (Grajek, 2018).

A growth mindset will not thrive in an environment that is psychologically unsafe. How can one learn from and embrace failure if one is ridiculed for that failure? In a psychologically safe environment, even someone with the most fixed mindset can observe others' attitude towards failure and experimentation and begin to adopt some of those behaviors. In the dynamic and fast-paced world of technology, it is impossible to know everything about everything. One must be comfortable with what they don't know almost as much as with what they know so they can collaborate with others to find better outcomes. Organizational attitude towards "failure" and understanding blind spots is an important component of psychological safety, and it is important to have an understanding of growth versus fixed mindsets and how they relate.

Leaders must have a growth mindset when it comes to developing their staff as well - including particular focus on their underrepresented staff - says CIO of Portland State University, Kirk Kelly (personal communication, October 16, 2018). Since many underrepresented groups remain minorities in higher education IT staff and management, managers should envision where employees can be in the future with the right amount of mentoring and development and encourage them, knowing that they are working against systemic barriers (K. Kelly, personal communication, October 16, 2018). This includes being hyper-aware that implicit bias is not unintentionally coming into play by assuming that these employees are not "the right fit" for particular jobs, such as with women in STEM or people from collectivist cultures in leadership roles who do not match the "rugged individualism" persona of the American leader.

SOLUTIONS AND RECOMMENDATIONS: THE ROLE OF IT LEADERSHIP IN CREATING SAFETY, INCLUSION, AND ORGANIZATIONAL DIVERSITY

It is apparent that sustaining diverse employees in a psychologically safe environment is a key factor in encouraging innovation. However, this is not as simple as hiring underrepresented minorities. Infusing organizational culture with inclusive and caring mindsets is difficult. Below are tactics that IT leaders can utilize in their own departments and institutions to create an environment that encourages inclusion and innovation. In this section, the authors also include examples of implementation from their current institution, the Office of Information Technology (OIT) at Portland State University (PSU). OIT employs a variety of strategies to cultivate an inclusive organizational culture.

Make Technology Leadership About People, Not Technology

IT leadership isn't about inanimate machines and software - it's about people and culture, and leading innovation is no different. In fact, a Gartner survey shows that 80% of IT leaders believe that the skills and knowledge their organizations will need in 10 years will have little resemblance to today (Robertson et al., 2017). In a decade or two, success will be about adaptation and learning, not using the technology

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learned in a class. In a time of constant technological growth, where consumer technology is speeding along and morphing regularly and where the demand for innovation is increasing, specific technical skills are not what will determine a successful IT organization - leadership of change, culture, and people is. Success requires a people-first mentality, including developing a people plan; moving from a closed IT department to one that is integrated with the daily life and people of the university; delegating technical management duties to others; and developing a change-ready culture that can adapt to what the future holds (Robertson et al., 2017).

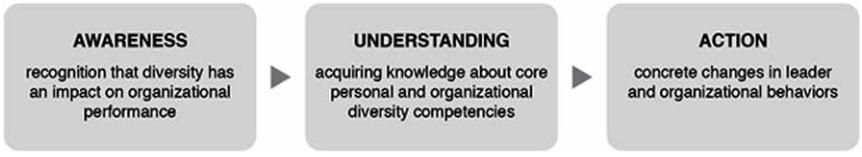
In OIT, "Employees are our number one value" is a saying that employees hear regularly from their CIO and other leadership. While technology may be the purpose of the department, OIT leadership goes to great lengths to let staff know that their experience and engagement are top priority. This includes focusing on an inclusive environment, interpersonal relationships, dedicating staffing resources to organizational culture, and generally focusing on supporting physical and emotional wellbeing via a culture of caring (Kelly & Kutch, 2017).

Champion Diversity and Inclusion

Many universities have Diversity & Inclusion offices, diversity roles in HR, and other departmental positions that manage general campus diversity efforts. As technology has its own challenges (and universities can be very large), a departmental advocate who understands issues around diversity and inclusion in technology can provide valuable insight to the department, such as local hiring challenges for underrepresented groups or online accessibility. However, one person dedicated to the task does not an inclusive environment make. Leadership commitment is the "cornerstone of any successful diversity initiative" (Dreachslin, 2007, p. 152) and the role of the IT leader is to hold diversity as a value for the entire department; otherwise, departmental buy-in will be limited, initiatives will lack the necessary support, and progress will be significantly hindered in this area.

Furthermore, Philips (2018) says that "color blindness is not an effective strategy for dealing with racial differences in the workplace. Rather, our research suggests that acknowledging and highlighting them, along with the related challenges, can go a long way toward kindling relationships." Ignoring differences, and especially the effect that being different has in social and workplace contexts, will only make a less inclusive environment. It is up to leadership to set the stage for acknowledging and embracing differences, and how those differences create stronger and more creative teams.

Figure 2. Becoming an effective leader in the context of Diversity (Adapted from Dreachslin, 2007, p. 153)



In OIT, leadership believes that there must be a sense of ownership by IT leadership towards diversity and inclusion in addition to the central Office of Diversity and Inclusion (K. Kelly, personal communication, October 16, 2018). This manifests in many ways; a few examples include being intentional about

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the gender and ethnicity makeup of leadership teams, dedicating staffing resources to diversity and inclusion initiatives, arranging for trainings such as implicit bias for staff and student employees, and ensuring that position descriptions and announcements are as inclusive as possible to encourage greater diversity and to communicate dedication to inclusion to potential employees. These methods have been effective, as evidenced by new hire diversity and the feeling of inclusion for all staff, which have both dramatically increased over the past few years.

Promote Psychological Safety

Such an environment cannot happen by wishful thinking; like any culture, creating an intentional environment with dozens or hundreds of different humans is far from simple or easy. It is the job of leadership to model, promote, and reinforce a psychologically safe workplace for *all* employees to bring their authentic selves.

First, employees and managers alike must know what psychological safety is, why it is important, and how to create it. Clarity is both an important part of safety (Kahn, 1990) and of communicating expectations. While it may be difficult to initially describe these behaviors, it will provide a reference and guideline for how individuals should act. While technical jargon, acronyms, and performance expectations are often defined and published in a shared space for all technical staff to see (such as an intranet), explicit behaviors or values are defined and communicated far less frequently, yet are more integral to the interpersonal functioning of the department. See Table 4 for examples of explicit behaviors to communicate psychological safety to employees; this concept is based off of "Word Pictures" in the book *Hiring for Attitude* (Murphy, 2017).

Table 4. Examples of explicitly stated behaviors that contribute to safety

Poor	Neutral	High
Safety: Telling coworkers that their ideas are stupid or wrong; rolling your eyes; ignoring or shutting down new ideas by others; getting upset when others express different opinions or challenge your ideas in a respectful manner; making fun of others' emotions.	**Safety:** Participating in conversation but with little enthusiasm; adding new ideas into the conversation; little to no encouragement of others for their ideas; silently letting others express different opinions, ignoring others' emotions.	**Safety:** Being excited about new ideas, building on top of them instead of changing direction to your own; encouraging others to express different opinions or emotions in a respectful way; asking others for their opinions or experiences.
Listening: Talking over others; not listening to their ideas; forgetting what others say even when they have said it multiple times; looking at your computer or phone while they are talking.	**Listening:** Letting others speak but not truly hearing what they have to say; just waiting for your turn to talk; not incorporating their thoughts into your own dialogue; looking at them while they talk but no giving any indication that their words are sinking in.	**Listening:** Setting aside your own thoughts when others are talking; incorporating their opinions or ideas into what you are going to say; making eye contact, nodding, and other active listening cues.
Differences: Telling other people they are wrong if their opinions are different from your own; refusing to change your mind; expecting others to assimilate into the way you want things done; assuming that other cultures or backgrounds are not valid.	**Differences:** tolerating differences but not accepting them as valid; assuming that other cultures or backgrounds should "tone it down" to fit in; letting others speak but not incorporating their alternate opinions or ideas.	**Differences:** Proactively asking others for their different experiences or perspectives; willingly changing your way of doing things if someone else has a better idea; appreciating other cultures and backgrounds even if that means doing something different.

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Table 5 provides ideas from Nembhard and Edmondson (2009) of what leaders can do to promote psychological safety in their everyday interactions with employees. Additionally, leaders should measure and understand levels of safety (through talking to staff and collecting data) and ensure to advertise for this so that new employees understand this cultural expectation.

Table 5. How leaders can promote psychological safety (Adapted from Nembhard & Edmondson, 2009)

How Leaders Can Promote Psychological Safety
• Be aware that those lower in the hierarchy often feel less psychologically safe; just because a leader feels like the culture is safe doesn't mean all employees do.
• Understand that lower hierarchy employees often have valuable front-line perspectives of the department's operations that upper leadership may not have.
• Include others in decisions or discussions in which they might not otherwise have a chance to participate.
• Strongly express both invitation and appreciation for the input of others.
• Be democratic, supportive, and welcoming of questions and challenges.

In OIT, leadership understands the benefit of psychological safety and has made efforts to increase it via leadership development sessions with managers, trainings for all staff that focus on saying yes and listening to others, Crucial Conversations trainings, and soliciting anonymous feedback from staff about the level of safety they feel with their coworkers and managers.

Promote a Growth Mindset

To help reinforce a growth mindset, Dweck recommends complimenting others on their efforts over fixed intelligence attributes. For example, praising a developer for being fast or "smart" incentivizes speed or knowing the answer without trying hard; this can result in doing things quickly, or only doing things that are easy or that they are "smart" at. Working to learn new skills that one is not already "smart" at encourages growth and development. Dweck instead recommends that praise be focused on effort, creative solutions, or trying different options - think of praising iterative improvements and refactoring instead of focusing on a waterfall approach.

Many organizations have some version of "work on a pet project" time, ranging from a certain amount of time each week to a day set aside per year. These innovation days have resulted in inventions such as the 3M's Post-It and Google's Gmail (Pink, 2011). While a university may not be able to provide 20% of each employee's time to "pet projects" as Atlassian does, IT departments can learn from the business world and provide one or two days a year for this activity. In a psychologically safe environment where growth and learning are encouraged, employees can feel okay exploring the topics they care about yet may not get to work on regularly; they can work with others they don't normally interact with, such as team members on a different side of the department, exposing them to different backgrounds and perspectives; and are encouraged to spend time experimenting. This time will help show that a growth mindset is valued, fuel innovation, show employees that their experiences and engagement are valuable, and provide new ideas that will contribute to technological and student success.

In OIT, "AMP Day" is a semi-annual event that was initially spawned by Daniel Pink's Book DRiVE (2011), which focuses on the principles of Autonomy, Mastery, and Purpose - hence the name AMP. This is a day when, as mentioned in the previous paragraph, staff can work on a project of their choice

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(somehow related to the university) that encourages cross-team collaboration, though solo projects are allowed. All staff are encouraged to attend; reserved workspace, activities like stretch or music breaks, and presentations make this a very popular event in OIT.

Acknowledge Bias

Implicit or unconscious bias is the tendency to make unconscious decisions about others based on their association with particular groups, such as race/ethnicity, gender, disability status, and many more. Much research has been done about the effects of implicit bias in the workplace, including interviews, hiring, and discrimination (Jost et al, 2009). Unfortunately, bias comes out when making quick decisions, such as during interview assessments or during conflict (Price & Wolfers, 2007) - situations in which Kahneman (2015) would say our brain is "thinking fast" and bypassing awareness. These deep, unconscious, and often lifelong connections are nearly impossible to eliminate; it takes acknowledgement and practice to interrupt those biases in ourselves or to activate the "slow thinking" parts of our brain that are more conscious, aware, and considerate (Kahneman, 2015). It also requires tact and interpersonal skills to challenge or interrupt these behaviors in others while still providing a safe environment and positive working relationships.

Research has shown that HR trainings focused on diversity and inclusion and bringing awareness to unconscious bias improve outcomes in homogeneous groups. According to Kochan et al. (2003), "when HR practices support the creation of a workforce that has the skills needed to turn diversity into an advantage, diversity is more likely to lead to positive performance outcomes" (p. 7). However, implicit bias is not a problem that can be solved by a simple mandatory training; required trainings can actually correlate with decreased diversity, whereas those that are voluntary have the opposite effect (Dobbin & Kalev, 2016). IT leaders can partner with others on campus (such as the Office of Diversity & Inclusion, communications, or HR) to not only provide trainings, but to figure out how to incorporate equitable and inclusive practices into the daily work and culture of the department. Garner research shows that leaders must practice self-awareness and examine their own biases as well (Rozwell & Rollings, 2018).

In OIT, awareness of the role of bias extends beyond organizing training sessions, though that is an important first step. One way is through trying to address biases that exist in the hiring process and taking action such as changing job posting language (with the input of Textio.com and partners in the Office of Diversity and Inclusion), training hiring committees on bias, and removing unnecessary limitations from qualifications (such as degree requirements). Additionally, OIT has hosted hardware training sessions focused at resource groups to train underrepresented groups in a safe space on the job skills needed to work for the OIT desktop support team.

Proactively Seek Out Varying Perspectives

A willingness to genuinely listen to opposing viewpoints, especially if they are challenging lifelong behaviors, is an important part of creating safety. Another important step is to not just listen when others bring up issues, but to make the effort to seek these issues out. Put in the time and effort to proactively learn instead of waiting for people who are part of these marginalized groups to initiate the topic. Additionally, be aware that many marginalized folks may not want to spend the energy to politely explain something they have likely been explaining or battling for many years. Avoid tokenizing or pressuring

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employees who do not want to have this conversation, and remember to use the existing resources available, some of which are explained in Table 6.

Diverse perspectives should not be constrained to topics of diversity or marginalization; other topics such as classroom technology, educational policy, or online learning should also be considered. It is important for the opinions of underrepresented minorities to be reflected in business decisions, not just subjects relating to their minority status or inclusion efforts. As student populations are often more diverse than IT staff, these observations can be critical in understanding how to provide technical services to the university and take into perspectives such as cultural responsiveness and accessibility that may have otherwise gone unnoticed.

Proactively seeking out varying perspectives includes an awareness of "groupthink" and being able to find additional viewpoints to avoid this trap. Irving Janis, a leader in Groupthink research, defines this as "a quick and easy way to refer to a mode of thinking that people engage when they are deeply involved in a cohesive in-group, when the members' strivings for unanimity override their motivation to realistically appraise alternatives of action" (Janis, 1972, p. 9). Groupthink acts as a counter to innovation - it encourages individuals to avoid challenging the status quo and rewards thinking like others. While this may seem more harmonious than a group with conflict, it is both detrimental to innovation and to sustaining diversity. However, a group with many differing opinions can be destructive and push folks away if that conflict is not managed well, so IT leaders must be intentional about how this is done. Seeking out diverse perspectives and a willingness to listen will provide a more respectful and inclusive environment for diverse employees, so that the organization can continue to succeed in supporting the university mission. It will also set a good example for colleagues.

Table 6. Examples of how to consciously and proactively seek diverse perspectives

Examples of How to Consciously and Proactively Seek Diverse Perspectives
• Pay attention to the words that are used in social media by marginalized groups to identify themselves (e.g., terms for gender or racial minorities change over time).
• Ensure that trainers and consultants represent a range of diversity; consider hiring someone to come in and speak about equity and inclusion issues in tech or working with the Diversity and Inclusion department to facilitate a training.
• Attend and host events that discuss inclusion and that have a diverse lineup of speakers; ensure that diverse groups speak about technical topics, not just about diversity.
• Know which diversity in tech groups exists in the area and partner with them, such as co-hosting events, sponsoring (e.g., space, food, cash, or A/V), volunteering, or even just advertising to employees.
• Consider seeking out a coach who can provide feedback and recommendations in a confidential setting (Dreachslin, 2007).
• Take a class at the institution or online, such as in civil rights or cross-cultural communication.
• Evaluate the diversity of personal connections; those with diverse personal lives are shown to be more diversity-sensitive than those who do not (Dreachslin, 2007).
• Read books or articles on equality topics such as *Why Are All the Black Kids Sitting Together in the Cafeteria* (Tatum, 2017), how to create gender inclusive events and workspaces for trans and non-binary employees, or websites like ProjectInclude.org that provide a plethora of resources to improving an inclusive workplace. The internet has countless articles, forums, resources, and publications (including through the university library).
• Notice the heterogeneity of project teams, speakers, managers, or forums; there are many diverse experts in higher education and technology who can add valuable insight.
• Play "devil's advocate" to groupthink, and create a safe environment in which staff can challenge beliefs and bring in alternate points of view as well.

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In OIT, department leadership is intentional about who is included in providing input or making decisions. This includes seeking diverse perspectives on hiring and project committees, reaching out to those with different backgrounds to solve problems (e.g. incorporating design thinking principles), and ensuring to include introverts in conversations by giving time to reflect and write (such as methods like "brainwriting") before speaking.

Increase Organizational Trust

Trust is an important component of any functioning organization and goes hand-in-hand with safety (Kahn, 1990). Trust can be difficult for marginalized groups who have often experienced colleagues or managers participating in discrimination or being unwilling to listen; however, trust is crucial for their engagement in the work (DelCampo, Rogers, & Jacobson, 2010). Employees must trust that the organization is fair, which ultimately means trusting in its leadership (MacLeod & Clarke, 2009). While creating this environment is imperative for an organization, most employees say they do not trust their management; as trust must first be received in order to be given, leaders must first trust their employees (Brower, Lester, & Korsgaard, 2017). Table 7 covers some of the benefits and attributes of a high-trust organization. Understanding the trust issues that exist in an organization is essential for beginning a positive culture shift that will create a more inclusive environment in which diversity can thrive (Kutch, 2017).

One important component of both trust and innovation is autonomy (Pink, 2011). Micromanaging suggests to employees that they are not to be trusted to do their jobs correctly; unfortunately when managers are promoted for their high technical competency and not trained on good management practices, they do not often know any other way. However, setting and communicating clear goals (not simply assigning tasks), giving employees the autonomy to reach that goal in the way that works best for them, and providing consistent feedback along the way will encourage engagement, productivity, innovation, and trust (Zak, 2017). IT leaders must communicate these principles through the organization to technical managers or their effects will not be felt by all staff. Coworkers are nearly if not as important, as coworker trust has a significant impact on psychological safety as well (Edmondson, 2004).

Table 7. Attributes of high- and low-trust organizations (Adapted from Brower, Lester, & Korsgaard, 2017; Zak, 2017)

High Trust Organization	Low-Trust Organization
• Employees are more engaged, more productive, have more energy at work, collaborate better, and have higher retention. • Employees suffer less chronic stress and are happier with their lives (factors which fuel stronger performance) • Employees feel safe to make mistakes in pursuit of excellence • Employees feel autonomy to think creatively • Organizational climate is understood by leadership • Leadership carefully gives up control • Leadership pushes for needed change • Information is shared and feedback solicited • Leadership is willing to experiment (innovate) and learn • Employee development is an investment	• Employees exert less effort, are less productive, and are more likely to leave. • Management lacks self-awareness • Risk-averse culture • Bottom-line mentality • Leadership ignores discrimination or harassment complaints

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In OIT, leadership knows that trust is complicated and there is no simple solution. Many of the suggestions in this section help build a sense of organizational trust, such as annual one-on-one meetings with the CIO, proactively seeking and responding to feedback, and reporting back on cultural and diversity data. Additionally, leadership has become more flexible with scheduling (e.g., working from home one day a week, encouraging four ten-hour days in the summer to take advantage of long weekends), knowing it is not just important for trust and engagement, but for providing options for a range of employees, such as those with children.

Implement Good Hiring Practices

Hiring managers in particular should be aware of common biases that may exist in their field and consciously ensure they are not falling into these ingrained ways of thinking when making assessments about candidates. For example, a trait such as leadership ability can be judged differently in a woman versus a man, or technical competency differently in a person of color versus a white person. "Résumé tests," which consist of sending out résumés or writing submissions for a variety of jobs with nothing changed but the presumed ethnicity or gender of the applicant, often show great discrepancies in call-backs for marginalized populations (Bertrand & Mullainathan, 2003); similar tests have been done with computer programming as well (Terrell et al, 2017). The results of these tests highlight bias, stereotypes, and assumptions as the hiring managers discount the capabilities of these groups, even if mostly subconscious. Indeed, implicit bias is becoming a known villain for pushing underrepresented minorities out of STEM fields (Williams, 2015).

Position Qualifications

Understanding the historical context of diversity and bias in IT is an important first step for interrupting it. Firstly, higher education itself has historically been a privilege accessible to a majority white population. While segregation practices are no longer legally in place, these roots of higher education have created a lasting effect that benefits white people and supports ingrained systems of oppression. Additionally, poverty and low socioeconomic status disproportionately affect people of color, creating many financial and educational barriers to entering into higher education. Demographically, degrees in computer science have fluctuated over the years, but as of 2018 are still only 18% obtained by women, which was actually a decrease from 2004 (25%) and 1995 (29%) (National Science Foundation, 2017). For these reasons, requiring or preferring candidates with typical technical degrees (e.g., a Bachelor's in Computer Science) will automatically skew preferences towards people who have been more able to acquire such a degree, even if candidates without that certification are just as (or more) qualified.

Employment in the technical field has also historically been for the mostly white, able-bodied, straight, cisgender man. Those who do not fall into this demographic may have had a difficult time entering or staying in the industry, be it from manager bias limiting their career growth, a toxic culture that was too difficult to stay in, or a lack of the education and certifications to get them in the door. Hiring managers should instead focus on abilities rather than years of experience in an industry that many underrepresented groups have been excluded from for many years.

Additionally, the most successful employee is not, actually, just the "smartest" one (Murphy, 2017). A master's degree in engineering or 15 years of experience as a system administrator does not mean someone will be able to learn new technologies, think of or encourage new ideas, create a welcoming

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environment for new employees, or care about the success of the department and university community. There are many innate attributes in successful employees to assess, while technical knowledge can be trained. A focus on training and mentoring can speak to those with the interest and capacity but low years of experience, and also shows that the organization values the learning process and not just knowledge.

Hiring Committees

When forming a hiring committee, the makeup of the group should be scrutinized. Acquiring a diverse set of committee members is essential for having good representation of the organization and a broad understanding of candidate capabilities. A potentially successful employee is not merely identified by how much technical knowledge the person has. Other attributes are more important, such as emotional intelligence, learning agility, and collaborative skill. A hiring committee should include folks from different teams and preferably, at least one person from outside of the IT department in order to reflect a variety of areas of expertise. Underrepresented minorities should also be included, such as women and people of color. This not only helps to provide multiple perspectives but also communicates information about the organization to the applicant. What does the panel say about the diversity of the department? What type of candidates will be most excited about joining the organization based off of the interview panel?

When selecting committee members, be careful not to tokenize - do not invite an underrepresented individual to the committee so that they may "represent" their demographic's viewpoint on the person. Someone's marginalized status does not mean this person speaks on behalf of all those like them; individuals have valuable perspectives for the committee beyond their demographic status. Also, underrepresented folks possess their own conscious and unconscious biases and aren't necessarily skilled at being aware of them simply because they are part of a marginalized group.

Advertising and Selection Process

Job descriptions, advertisements, and the selection and interview process all leave many opportunities for inequity to sneak in via wording, qualifications, and biased decisions. For example, requiring a bachelor's degree in computer science will exclude many women or groups underrepresented in higher education. A review of the process through the equity lens can help identify possible points of bias. Applicant tracking technology can often be used to review applicant demographics. Understand the target market of advertising locations, and seek out job boards or local groups that cater to underrepresented groups such as women or people of color. Partner with programs that work with placing diverse candidates who are newer to the tech sector such as internship programs or code schools.

Student employees are also an excellent pipeline. Student employee populations can be more reflective of the student body and therefore more diverse than permanent staff, and provide an excellent pipeline of people who are already familiar with the organization (and vice versa). Consider training programs to specifically prepare student employees for staff positions that may be more entry level, so that they may gain experience and grow into other areas of the organization.

In OIT, great care has been given to reducing bias in the hiring process, though this is something that can always be improved upon. As mentioned above, the department has partnered with the Office of Diversity and Inclusion on multiple efforts, such as training managers about bias in the hiring process, specifically in STEM fields. Job descriptions and advertisements have been reviewed through the equity lens and with help from outside sources to ensure they are as inclusive as possible. Hiring

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committee makeup has changed dramatically - whereas there were commonly committees of 8-10 white able-bodied cisgender men in years past, now committees are kept small and intentionally include a variety of perspectives of underrepresented groups and with various professional backgrounds. OIT has put significant effort into creating an inclusive recruitment and hiring process; partnerships, community best practices, and a willingness to seek out better ways of doing things have all been essential for the improvement process. Because of that, the department has acquired more talent with a variety of backgrounds, has increased innovation, acceptance of different ideas, and the capacity to think about problems in different ways.

FUTURE RESEARCH DIRECTIONS

Little research exists specifically for higher education IT departments when it comes to this chapter's topic, innovation through diversity and inclusion. The authors would like to see further research and/or case studies that focus on how educational institutions are using diversity and inclusion initiatives to drive successful IT leadership, particularly when it comes to innovation. More specifically, the authors recommend case studies of IT departments that have successfully increased the number of underrepresented groups in their staff along with an analysis of organizational culture changes, changes in department performance, and measures of innovative solutions or outputs for the university. These must be measured carefully and intentionally to show correlation between increased diversity, inclusion, and innovation.

CONCLUSION

While the role of the university as a purveyor of information and education remains relevant, in an era of plateauing or declining enrollment, higher education must acknowledge that the way to achieve its goals must change - and technology is often part of that conversation. While IT leadership necessarily involves this technology, it is also largely about people, as they are the ones creating, administering, and interacting with the technology. This chapter has discussed how organizational diversity has a critical impact on innovation. However, it is up to leaders to create an environment where everybody feels a sense of belonging and where diversity (and ideas) can flourish - such as through safety, awareness, hiring, mindsets, and listening. Most people believe in a positive culture, but leaders are sometimes unsure what exactly that means or how to attain it. There is no easy or overnight solution to any culture change, much less a challenge many organizations are facing today; this chapter provides research, definitions, details, and actionable recommendations for that change so that leaders can create a more inclusive organization where diverse employees can thrive and innovate for the benefit of the university and the common good.

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KEY TERMS AND DEFINITIONS

Culture: The social norms in an organization that dictate what is accepted behavior, though often not explicitly stated or recorded.

Diversity: In the context of organizations, the state in which many different types of people exist.

Growth Mindset: A state in which people see "failure" as a learning opportunity and believe that humans can continually learn and grow.

Inclusion: The act of including others; a state in which people feel like they belong.

Psychological Safety: An environment in which others feel like they will not be punished or embarrassed when taking interpersonal risks (e.g., asking for help) or making mistakes.

Underrepresented Groups: A group that is less represented in one subset (e.g., employees in a particular sector, such as IT) than in the general population. This can refer to gender, race/ethnicity, physical or mental ability, LGBTQ+ status, and many more. Also referred to as minorities, underrepresented minorities, or marginalized populations.

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Chapter 90
Cultural Norms and Expectations Within the Hospitality Industry

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ABSTRACT

The business environment differs across nations and throughout industries. The hospitality industry is no different; one managerial approach that functions well in one nation might not be necessarily applicable in another. This suggests that to successfully manage across different countries it is vital that managers acquire the necessary skills to effectively manage employees and guests with different backgrounds and expectations. Hence, the objectives of this chapter are to define and discuss culture and cross-culture management, explain the importance of understanding multicultural perspectives, and discuss the managerial approaches of managing workforce diversity and cultural diversity.

CHAPTER OBJECTIVES

The business environment differs across nations and throughout industries. The hospitality industry is no different; one managerial approach that functions well in one nation might not be necessarily applicable in another. This suggests that to successfully manage across different countries it is vital that managers acquire the necessary skills to effectively manage employees and guests with different backgrounds and expectations. Hence the objectives of this chapter are to:

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- Define and discuss culture and cross-culture management
- Explain the importance of understanding multicultural perspectives
- Discuss the managerial approaches of managing workforce diversity and cultural diversity

INTRODUCTION

According to the labour migration report released by the British Hospitality Association (2017), up to 23.7% of the UK hospitality workforce market is made up by European nationals, other than British, and 15% are nationals of the rest of the world. The percentage varies based on location, with the highest in London, where the hospitality related workforce come from migrant labour force in proportion of 64%. Moreover, in some businesses the percentage of migrant workers can grow to 98% (National Institute of Economic and Social Research, 2016). As the recruitment needs are constantly growing, and currently a quarter of hospitality related businesses have an average of 38% hard-to-fill vacancies the solution links with the use of the international talent pool. Thus, the success of a hospitality firm relies on the management of both multicultural workforce and multicultural guests. This could be an opportunity as different cultural background could be beneficial to companies in the hospitality industry. However, undoubtedly this can also be a challenge for both managers and operational workers as the differences of cultural background may lead to conflicts, which could damage not only the workflow and the work environment, nevertheless the company image as well. Many issues might be related to communication, they could however be beyond language and might reside in the lack of cultural awareness and sensitiveness to understand the differences in culture.

Meanings of Culture and Multicultural Perspective in Hospitality Industry

"A fish only discovers its need for water when it is no longer in it. Our own culture is like water to a fish. It sustains us. We live and breathe through it. What one culture may regard as essential, a certain level of material wealth, for example, may not be so vital to other cultures" (Trompenaars and Hampden-Turner, 1998, pp:20).

Activity: What does culture mean to you?

The word culture may vary in meaning when used in different contexts; generally, it refers to beliefs, customs, or certain ways of living, which are collective, shared and recognized by people in a given society. It regulates and controls individual's attitudes and behaviours; one culture is not right and the other is not wrong because of differences. Commonly the terminology for culture is applied to ethnic groups or tribes in anthropology for nations and organizations in political science sociology and management.

Numerous experts in the study of this field have strived to devise what they believe would better define the concept of culture. Hofsted (1991), Czinkota and Ron Kanen (1993) and Trompenaars (1993) have demonstrated a common understanding that culture is grounded in religion, languages, economies, values, attitudes, status, social institutions, policies, and customs. Bodley (1994) who worked in the field of cultural anthropology produced a list of definitions of culture constructed based on his analysis of psychological, social, ethnological and linguistic data. Below (Table 1.1) is a summary of Bodley (1994) definitions of culture, which should be taken into consideration from an anthropological perspective.

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Table 1. Definitions of culture

Topical	Culture consists of everything on a list of topics, or categories, such as social organization, religion, or economy.
Historical	Culture is social heritage or tradition, that is to future generations passed on
Behavioural	Culture is shared, learned human behaviour, a way of life.
Normative	Culture is ideals, values, or rules for living.
Functional	Culture is the way humans solve problems of adapting to the environment or living together.
Mental	Culture is a complex of ideas, or learned habits, that inhibit impulses and distinguish people from animals
Structural	Culture consists of patterned and interrelated ideas, symbols, or behaviours.
Symbolic	Culture is based on arbitrarily assigned meanings that are shared by a society.

Source: Bodley (1994)

Activity:

- How would you describe the culture in which you grew up?
- Do you think an individual can change their culture?

According to Bodley (1994) culture is shared, learned and symbolic. This means that culture is a social occurrence that is learnt and implicates subjectively assigned symbolic meanings.

Figure 1.

For instance, the hand sign for "OK" in the USA, used to express that everything is good or agreed has different meaning in other countries: it represents calling a person a homosexual in Russia and Turkey, in Germany means calling a person a lunatic, in Greece it is a symbol for the opening at the lower end of the digestive tract (to which solid waste is eliminated from the body). Hence what is considered to be perfectly acceptable in one country could be perceived as offensive and sometimes confusing in another. The aforementioned examples suggest that being shared learned and symbolic, the culture is neither inherited biologically nor is a peculiar cultural behaviour but it is rather adaptive, integrated and passed on across generations. The culture does not depend on the individual, it precedes and survives any individual, nonetheless is more an abstract reality as viewed by Brodley (1994).

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Activity: Think of the meaning of a specific sign used in your culture and use an online research engine to find out if it does have other meanings that the one you know already.

Within the hospitality industry the culture where the activities take place influences the business through religion, languages, economies, values, attitudes, status, social institutions, policies and customs. These factors influence the employee's behaviour, the customer service, and the managerial values and consequently have an impact on the hospitality and managerial decisions making. Culture can be looked at from three levels as shown below.

Table 2. Levels of culture

	Definitions
National	Collective properties that are ascribed to citizens of countries (Hofstede, 1984)
Professional	Focus on the distinction between loyalty to the employing organization versus loyalty to the industry (Gouldner, 1957)
Organizational	The social and normative glue that holds organizations together (Siehl & Martin, 1990)

The **national culture** consists of a set of norms beliefs, behaviours, and customs within a group of people from a sovereign nation, heterogeneous in nature. International hospitality professionals tend to develop managerial practices according to the national cultures they operate in. Tayeb (2003) sees the national culture as a constant thread through our lives, which makes individuals unique and distinctive from those in other countries. However, in Tayeb's vision, the national culture contains sufficient elements ('institutions') that when mixed together enable a national culture to be created. These elements are the family, religion, education, mass media communication and the multinational company.

Table 3. Elements of national culture

a) Family	The basic social unit where 'acculturation' takes place, where the culture of a particular environment is instilled in a human from infancy. *In many countries, the first seven years spent at home, within the family. These first years are considered to be essential for the future adult because they constitute the source of values such as good and bad, tolerance, inclusiveness, hygiene, common sense, politeness, respect, attitudes towards other beings, toward learning and work. These being said, it is easy to guess how the childhood experience could influence a future hospitality employee.* • *The values acquired in childhood from the family could impact on an individual's ability to provide excellent customer service, exceptional organisational skills or cooking skills and the ability to work clearly defined protocols.* Do you agree with this statement?
b) Religion.	Religious beliefs can have a significant effect on a person's view of the world. This does not mean that people need to 'believe', but religion has helped in all sorts of direct and indirect ways to shape the environment in which people live. Religion influences the behaviour, eating habits can strengthen universal values. It is well known that tourist destinations where the majority of indigenous population adheres to a certain religion have specific characteristics and sometimes expectations in terms of tourists' behaviour. The religion influences the local cuisine in terms of eating behaviour and ingredients used. It is also having an impact on expectations: in some destination, tourists are guided to follow up appropriate dressing code and to respect local behaviour norms. • *Can you give an example of a tourist destination where tourists need to follow a particular dress code?*

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Table 3. Continues

c) Education.	The value system on which education is based and the choices it makes in terms of the curriculum both help in the formation of a culture, particularly where educational institutions are well developed. At the micro-level, the teaching approach used and the manner of learning can also affect future learning and attitudes. This can determine the quality and versatility of human resources in the labour market. • *In your student life, have you ever met a teacher that influenced your attitude? If yes, how?*
d) Mass media communication	Tayeb, (2003) pays particular attention to the effect of recent advances in communication on the development of culture. The ever-increasing presence of mass media has given a new meaning to shared experience: newspapers, magazines, television, and radio, "*bring people closer together irrespective of their geographical locations, but also in terms of spreading values, attitudes, tastes, meanings, and vocabulary – in short, culture"*. (Tayeb, 2003: p20). She does not, however, regard this as being a threat to the distinctive cultural characteristics of a nation. Instead, the mass media have created a new common dimension in which people can share experiences if they choose to. Mass media is a powerful tool in hospitality, an industry where the products have intangible characteristics and where the customer satisfaction is a priority. In hospitality, using mass media to present products and services through 'instagrammable' pictures could and does generate future sales and strengthen the brand image and brand awareness. Not counting anymore that shearing information to a wide pool of possible customers is a huge benefit. • *Have you ever been influenced by a newspaper/magazine article to choose a holiday destination?*
e) The multinational company.	This is a powerful culture-building institution, whose products and services can influence the way people live, whose operations can affect how and where they work. However, the multinational is also influenced by the preferences at national level regarding product taste and form and the promotion of its goods and services. • *Have you ever seen a product being advertised in a different ways in various countries?*

Thinking to globalization and the expansion of hospitality businesses across the borders, the mix of believes and religion in the workplace can be considered a challenge for leaders and managers? Why?

Organisational culture can be defined as, values and behaviour that are shared by a group of personnel, which shape the sense of what is acceptable within the group. These passed by exiting members to new groups, which join the organisation through either formal or informal socialisation (Wilson, 2001).

Many forces, among which religion, political power distribution, strong and charismatic leaders and narrators have indicated that culture provides people with identity, roots, historical background, giving a sense of belonging. The culture has become a significant component of hospitality organisations across the globe in general and the importance of managing cross-culture in the hospitality industry cannot be overemphasized.

Each organisation functions under the auspices of the values recognized within the contemporary business environment, being somehow a reflection of the host community. It can be said that the effects of the factors affecting the community are spilled within the organisation through the employees' behaviour, attitudes, and are reflected in the work efficiency and productivity. Thus, the organisation has its own specific characteristics given by the attributes of all stakeholders, all these characteristics being integrated in the concept of organisational culture. The understanding of the organisational culture helps one to understand the way it functions and the way it is lead and managed. It is argued that elements of culture can affect the way companies determines their strategies, establishes goals and the way the company works. The stronger the organisational culture, the bigger the impact, and it is easier for employees to assimilate and to accept the organisational values. It should not be forgotten that the key employees involved in an organization are influenced by their own cultural backgrounds and shared experience since these have helped shape their own values and perceptions. Glover (1987) noted that management inflexibility towards culture in the hospitality industry might lead to ineffectiveness, whereas developing

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a strong organisational culture enhances organisational effectiveness. LeBlanc and Mills (1995) state that there is a strong link between performance in the hospitality industry and organisational culture. They identified a variety of factors, which they considered of high importance for executives to control and consequently cultivate a positive organisational culture, essential for organisational development. Undoubtedly, the way employees are managed can determine the level of loyalty to the organisation and influences the quality of the services provided. The view that the organisational culture has a significant impact on performance and long-term productivity is also shared by Cameron and Whetten (1983), Barney (1986), Asree, Razalli and Rizal (2010), Chegini (2011), and Kallarakal et al. (2011).

Organisational researchers have attempted to explain employee behaviours and attitudes in regards to organisational characteristics. A famous researcher who gained international reputation in the field of cross-cultural studies is Geert Hofstede. He developed a framework known as *the Hofstede cultural dimensions*; it helps organisations to identify cultural differences. Thus, this model can help hospitality managers to gain understanding and consequently deal with issues raised from human interactions in multicultural working environments.

Professional Culture

Schein (1996) presented three professional cultures that can be found in management: Professional culture refers to the set of values shared by professionals working together (Hall, 2005).

- **Operators:** those directly involved with the provision of services and the production of goods.
- **Engineers:** those responsible for the designing and monitoring the technology behind the provision of services and production of goods.
- **Executives:** these are the senior managers who share tacit assumptions in relation to business decision-making. Now, the concerns are how professional culture co-exists within the hospitality industry, how the executives handle the operators and what are the best ways to resolve conflicts in a constructive manner. The way employees are handled can determine the level of loyalty to the organization. Hofstede, (1980, 1989 and 1991) identified types of professional culture in different countries which have shown that employees tend to feel more loyal to their profession and their professional code of ethics rather than loyal to the organisation. Therefore "Are hospitality manager skilled enough to build loyalty among its diverse workforce"?
  Activity: Mercosur and European Union historic trade agreement

Spotlight

The Southern Common Market (Mercosur) and the European Union (EU) concluded the negotiation after 20 years of efforts. According to estimates by the Ministry of Economy, the agreement will represent an increase of the Brazilian Gross Domestic Product (GDP, sum of all goods and services produced in the country) of US $ 87.5 billion in 15 years. According to the ministry, this figure could reach US $ 125 billion if it is considered the reduction of non-tariff barriers and the expected increase in total productivity of factors of production. The increase in investments in Brazil, in the same period, will be around US $ 113 billion. With respect to bilateral trade, Brazilian exports to the EU will have nearly US $ 100 billion in gains by 2035. In a joint note from the Ministries of Economy and Foreign Affairs, the Brazilian government highlights that the agreement is a historic milestone in the relationship between Mercosur

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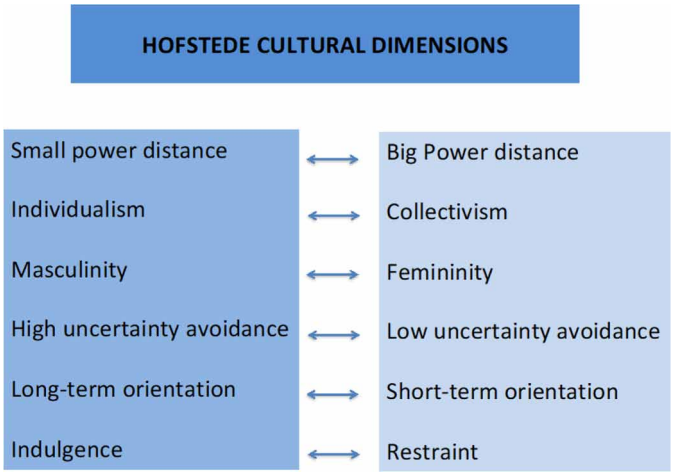
and the European Union, which together represent about 25% of world GDP and a market of 780 millions of people. "In times of tensions and uncertainties in international trade, the conclusion of the agreement underscores the commitment of both economic groups to economic openness and the strengthening of competitive conditions," says the note. The agreement between the two economic groups was closed after two days of ministerial meetings in Brussels on 27Th and 28th June 2019. Brazil represented the ministers of foreign affairs, Ernesto Araújo, and of Agriculture, Livestock and Supply, Tereza Cristina, and the special secretary of Foreign Trade and International Affairs of the Ministry of Economy, Marcos Troyjo. "The trade agreement with the EU will be one of the largest free trade areas in the world. Due to its economic importance and the scope of its disciplines, it is the broadest and most complex agreement ever negotiated by Mercosur ", emphasizes the Brazilian government. In a post on Twitter, President Jair Bolsonaro highlighted the leadership of Ambassador Ernesto Araújo and also congratulated the teams of Minister Tereza Cristina and the Minister of Economy, Paulo Guedes, for their efforts to close the agreement. "History!" Wrote Bolsonaro on the social network. "This will be one of the most important trade deals ever and will bring huge benefits to our economy." Source: Adapted from www.noticiasbh.com.br/bolsonaro-fecha-acordo-historico-com-mercosur-e-uniaoeuropeira accessed on 23 August 2019

- Do you think that this historic agreement will affect the hospitality industry positively or negatively?
- Would you say that the South American and Europeans Countries have a homogenous culture? Explain.

Hofstede's Cultural Dimensions

Figure 2.
Source: Developed by the authors



Hofstede's cultural dimensions theory is based on a pioneering study of 160,000 employees from 40 different countries conducted between 1967 and 1973. The study identified four dimensions on which work style differed significantly: power distance (strength of social hierarchy), uncertainty – avoidance, individualism - collectivism, and masculinity – femininity (task orientation – person orientation). Later

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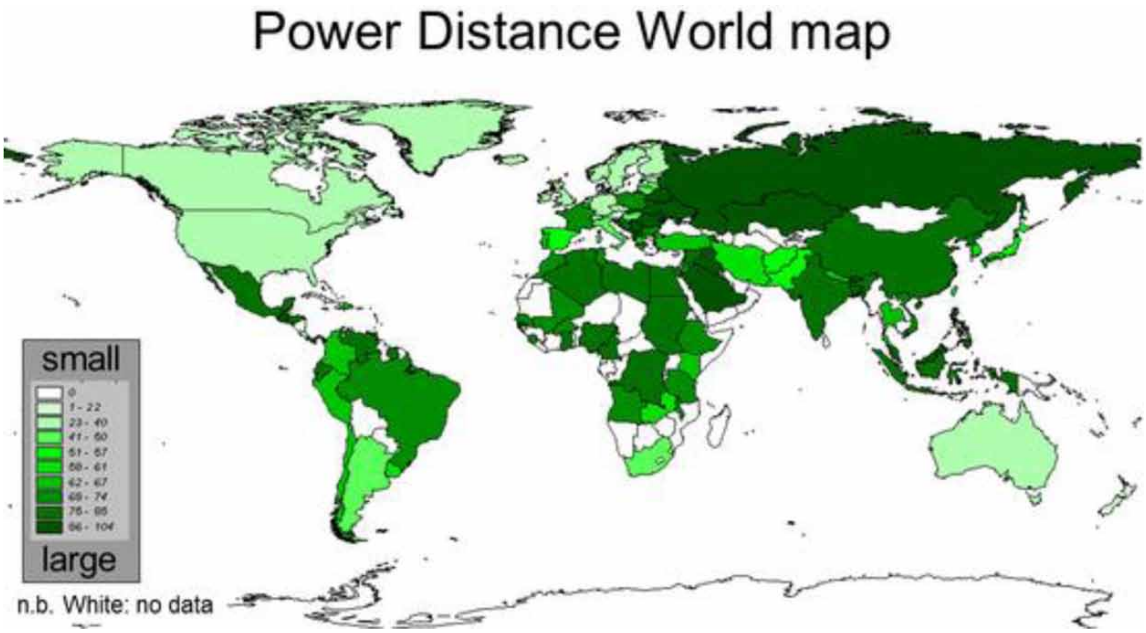
the theory was refined, and Hofstede added two more dimensions: long-term – short-term orientation and indulgence – self-restraint.

- **Power distance:** refers to the extent to which a member of organization who has less power expects and accepts unequal distribution of power. This dimension is important for manager as it can reflect the attitude of the employees toward the source of power: do they trust the authority or they question it? The power distance index is correlated with a dimension from Gregg and Banks' (1965) analysis of political systems and also with a dimension from Adelman and Morris' (1967) study of economic development.

A big power distance value will show that the hierarchy is embraced and established within the society/group, while a small power distance value will signify that the people use to contest the authority and attempt to distribute power. The access to this information could help a manager to adopt an appropriate leadership style and to better understand employees' behaviour and attitude.

Figure 3.
Source: https://geerthofstede.com/culture-geert-hofstede-gert-jan-hofstede/6d-model-of-national-culture/



- **Uncertainty Avoidance**: this dimension describes the extent to which people are or are not at ease with the ambiguity. Understanding this dimension is important for a senior manager, especially in the case of change management because it reflects the people's resistance to change and the level of tolerance for ambiguity. Where the ambiguity is not easily accepted (high scores) there is the need to rely on strict rules and codes of conduct, bureaucratic managerial styles could be adopted. An environment with high level of tolerance and ambiguity acceptance is more favourable to a fluid and change.

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Figure 4.
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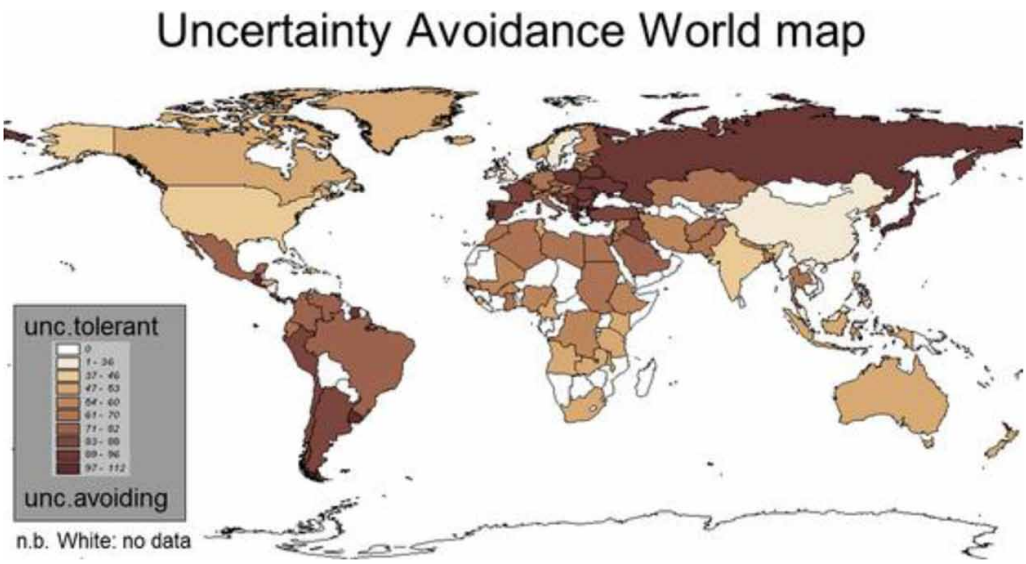
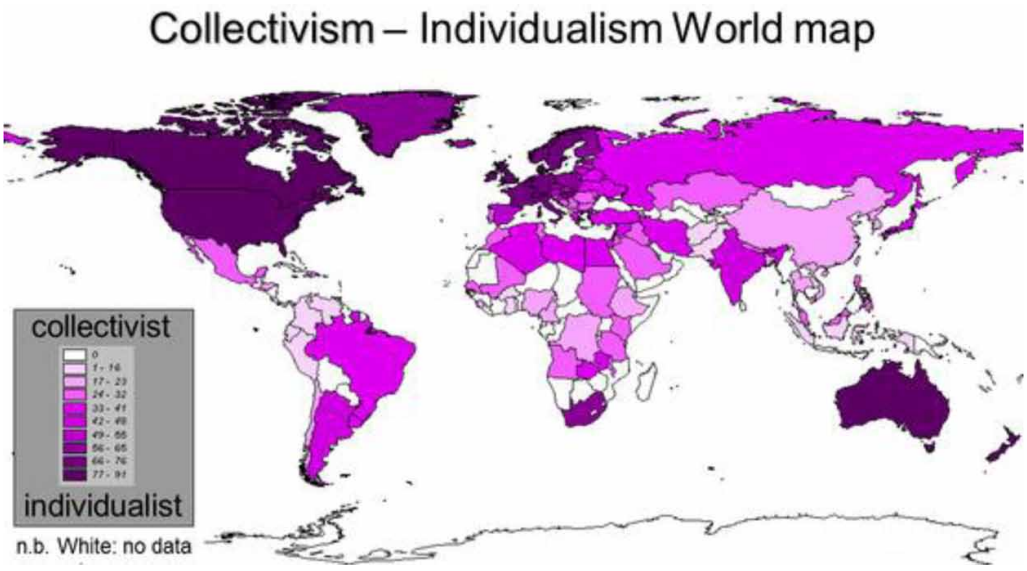


- **Individualism vs. Collectivism**: refers to individual's preference of being left alone to look after themselves or want to remain in a closely knitted network. The understanding of this dimension is important when planning and managing the facilities and the operations. The authors consider that within hospitality businesses most of the operations and activities are closely linked to collectivism, as the coordination and teamwork are essential in all departments.

Figure 5.
Source: https://geerthofstede.com/culture-geert-hofstede-gert-jan-hofstede/6d-model-of-national-culture/



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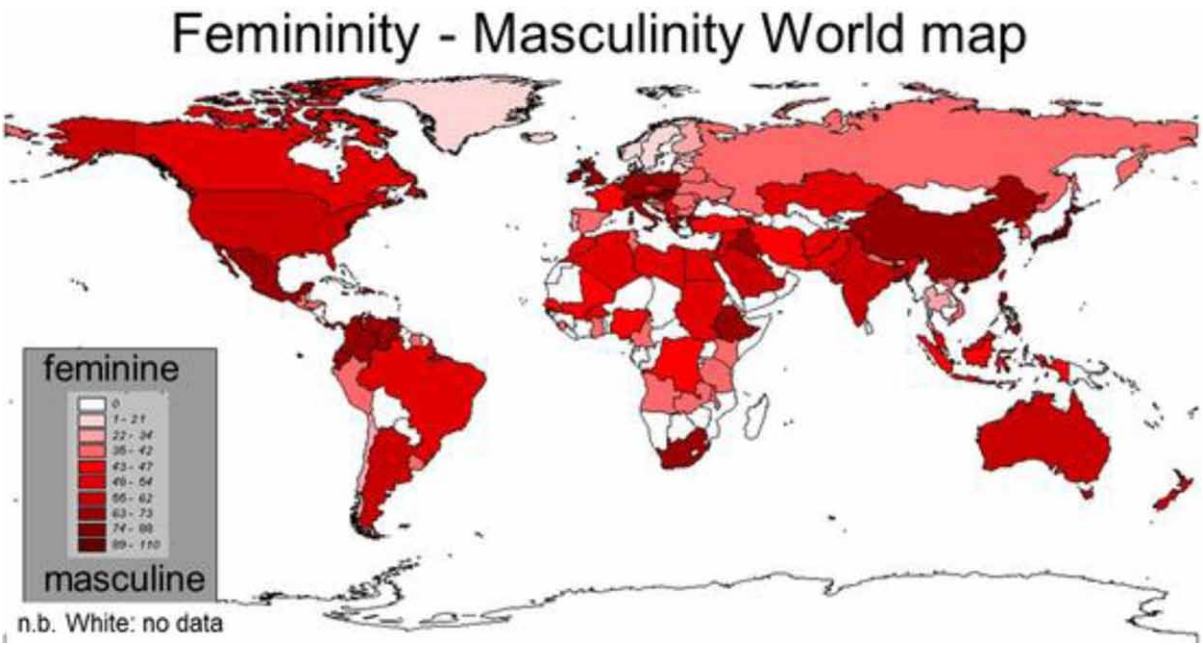
- **Masculinity vs. Femininity**: Masculinity implies preferences in societies for assertiveness, heroism, achievement and material reward for attaining success. Conversely, femininity represents a preference for modesty, cooperation, quality of life and caring for the weak.

Mooij and Hofstede (2010) presented 76 different countries for Masculinity versus Femininity. Masculinity is high in Japan, in German-speaking countries, and in some Latin countries such as Italy and Mexico; it is moderately high in English speaking Western countries; it is low in Nordic countries and in the Netherlands and moderately low in some Latin and Asian countries like France, Spain, Portugal, Chile, Korea, and Thailand.

Do you think that masculinity – femininity dimension could affect the characteristics of the customer service in hospitality? Explain your point of view.

Figure 6.
Source: https://geerthofstede.com/culture-geert-hofstede-gert-jan-hofstede/6d-model-of-national-culture/



- **Long-Term versus Short-Term Orientation**: this dimension refers to the propensity of a society toward searching for virtue. Short-term orientation relates to those societies that are strongly inclined toward the establishment of the absolute truth. This dimension is correlated with past, current and future actions, and traditional values.

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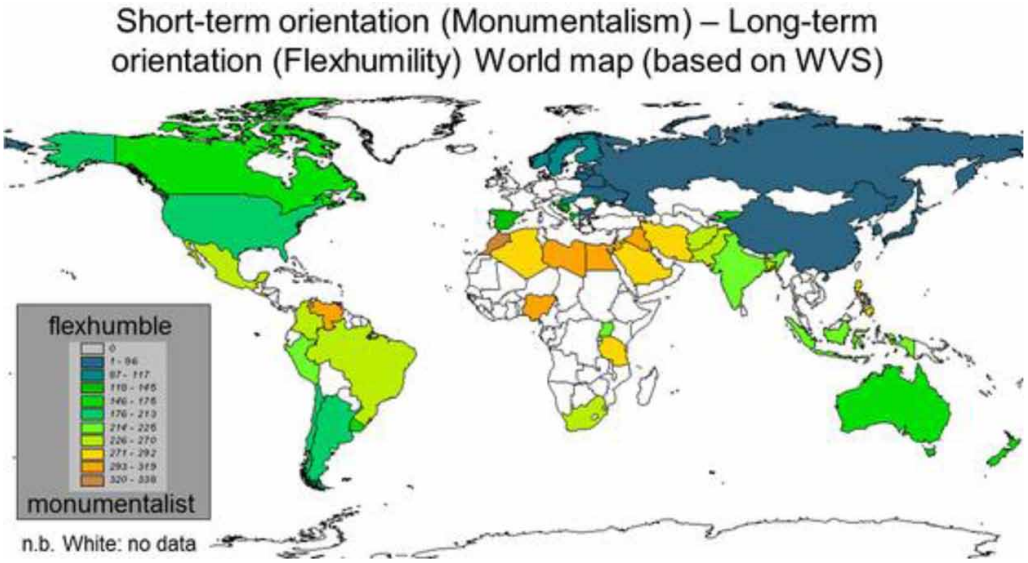
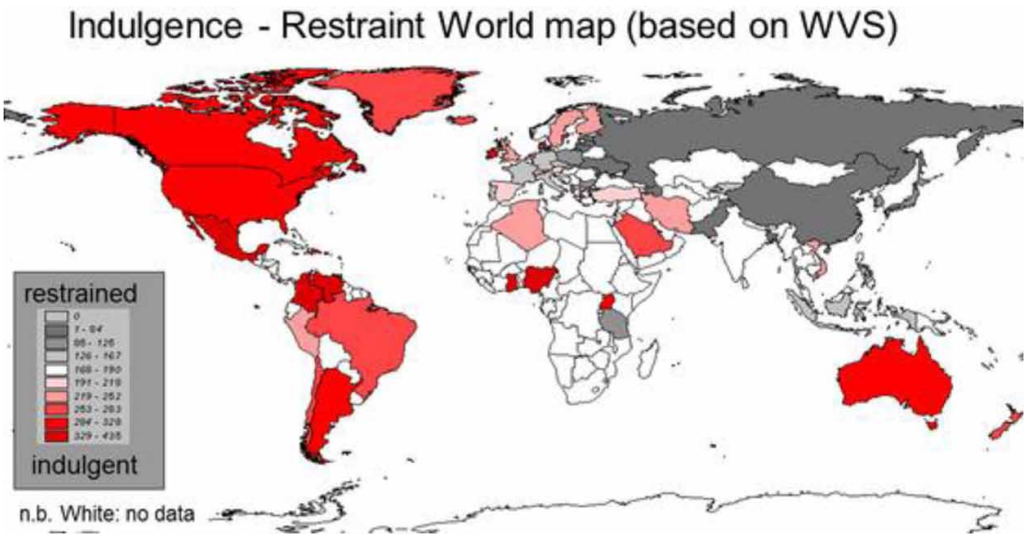
Figure 7.
Source: https://geerthofstede.com/culture-geert-hofstede-gert-jan-hofstede/6d-model-of-national-culture/



Considering the map above do you think there are any correlation between the long-term – short-term orientation and the level of economic development of a country?

- **Indulgence versus Restraint**: refers to the degree to which societies have control over their impulses and desires. This is the sixth and newest dimension added to Hofstede's framework in 2010 after a study focused on how happiness is viewed differently across cultures.

Figure 8.
Source: https://geerthofstede.com/culture-geert-hofstede-gert-jan-hofstede/6d-model-of-national-culture/



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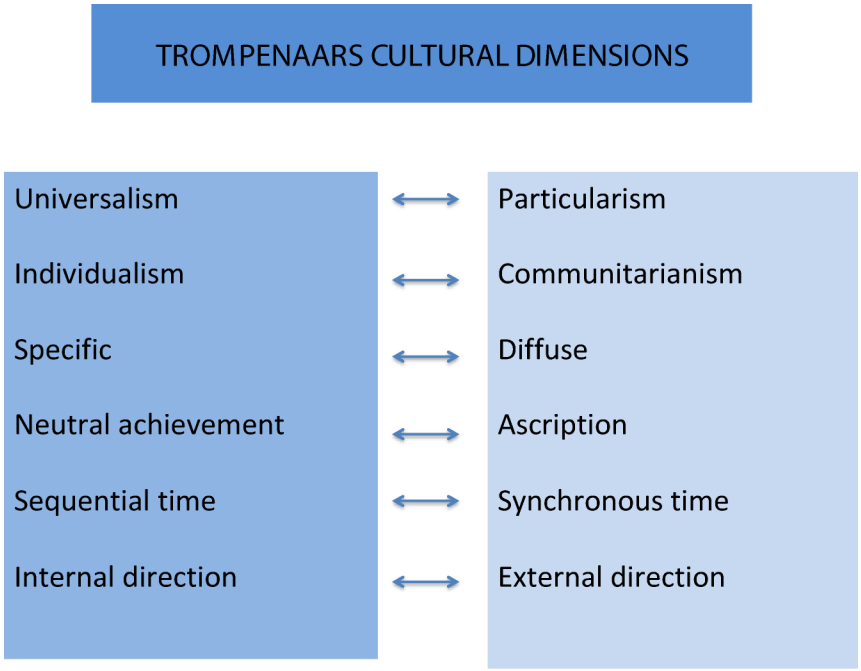
Do you think that the indulgence – restraint dimension could influence the hospitality related activities? Explain.

For hospitality professionals who work internationally and individuals who interact with people from different countries Hofstede's model, although developed many years ago, still is a useful tool to gain insights of how to tackle issues regarding to cross culture management.

Activity: Considering Hofstede's cultural dimensions, what characterises you as an employee?

Trompenaar's Cultural Dimensions

Figure 9.
Source: Developed by the authors



Trompenaars' cultural dimensions is a framework similar to Hofstede's, based on national culture differences and applied to business and management. Fons Trompenaars and Charles Hampden-Turner developed this framework in 1997.

Trompenaars'database covered about 15,000 respondents, some of which were participants in the author's cross-cultural training programs; others were employees in 30 companies in 50 different countries. Among the respondents, 75% belonged to management, while the remainder are general administrative staff, consisted mainly female.

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Universalism vs. Particularism

Universalism is regarded to when ideas can be applied anywhere and there is always a definition that can be used to determine the distinction between right and wrong. Standards and values are important and can only be departed from after consultation. It is generally accepted that in similar situations people from different origins receive the same salary.

Particularism is the belief that circumstances and relationships play an important role in determining how ideas can be applied into practice. Salary is linked to reputation and status is important in this.

In cultures with high universalism (USA, UK, Canada, Australia, Germany, Sweden) the business meetings are more pragmatic and professional while in cultures with high particularism (Venezuela, Indonesia, China, South Korea, former Soviet Union) the focus is on relationships and the particularistic environment (Luthans, and Doh, 2012).

Individualism vs. Communitarianism

Individualism perceives human beings as individuals, while communitarianism characterizes humanity as being part of a group. Trompenaars argues that the individualist culture is linked to the ideas of the western world, while the communitarian culture is linked to non-western countries.

However, cultures change continuously. For instance, Trompenaars mentions that Mexico was predominantly communitarian at first, but have been influenced by the global economy and now is moving towards a more individualistic culture.

Neutral vs. Emotional

Neutral culture is characterized by a control of emotions, while in an emotional culture they are expressed openly and spontaneously. For instance, cultures like Japan and Great Britain are neutral where they frown upon being angry in public or displaying any other emotional outbursts. Trompenaars make references to countries such as the Netherlands, Spain and Mexico where people often laugh, talk loudly and greet each other enthusiastically.

What do you think are the challenges of a businessperson originated in a neutral culture doing business/ working with people from an emotional culture?

Specific vs. Diffuse

- Specific: individuals have a large public space, which they share easily with other people. They also have a small private space that they share with good friends and close connections. People often approach each other informally in both the public and private space. Or they are using formalities differently, depending on their public role.
- Diffuse: culture where the public space and the private space tend to be interwoven. People in a diffuse culture will therefore protect their private space because this will provide easy access to the public space. People from a diffuse culture attach great value to formality.

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How do you think that the specific / diffuse cultural background of employees will impact the workplace environment and relationships?

Achievement vs. Ascription

In an achievement-oriented culture a person's worth is determined on the basis of their performances and how well they execute their tasks. Whereas, in a culture in which status is ascribed, the status is based on whom the person in question is. Their position is derived from individual characteristics such as gender, origin, age, career, a person's position or family renown.

Sequential vs. Synchronous Time

The sequential time refers to the specific time measurement (in minutes, hours, days, etc.) while the synchronous time refers to the rhythm of the group and biological clock. The time has a fluid perception in various parts of the globe. A five-minute break could last up to half an hour or more in some countries. In UK if one says, "the meeting will start at noon" everyone will arrive at 12am sharp, while if you are using same expression for example somewhere in Romania, people could arrive at the meeting somewhere between 12am and 2pm because "the noon" is not perceived as a fixed and specific hour. In Italy is most likely that nobody will accept a meeting, because is the time for an important meal. "Time is money" in countries like USA (sequential culture), thus businesswise it shall not be lost in activities which are not productive, and the meetings should have a clear agenda because the time is limited. In other countries (synchronic cultures) such as Italy the time is a more fluid concept; it is perceived as guidance for various activities rather then a time framework. For instance, the lunchtime in Italy is an important family gathering and the lunch break could last up to two – three hours, to allow everyone to have the lunch with the family. In Romania, arriving few minutes later to a meeting is not a problem. In some Asian cultures the time is closely linked with cosmic energies, and each activity to be successful should be done at the favourable time.

Internal vs. External Direction

This dimension refers to one's attitude versus the environment. Many eastern cultures are thriving to find the balance between the inner self and the external environment (internal direction) and it is accepted that there are forces that cannot be controlled. In these cultures, the future is a result of past and present actions. On the other side, in western cultures the individuals seek to control and modify the external environment (external direction), and the future is the result of present actions only.

Criticism of Hosftede's and Tropenaars Models

Since Hofstede's major publication in 1980, he became subject of criticism not only by fellow scholars but also from those who work on a daily basis dealing with issues arisen from cross cultural collaboration among organisations across the globe. One of the many criticisms is that Hofstede only used questionnaires surveys in one organisation (IBM) to measure culture and according to the critics this method is unsuitable and not the most appropriate. Hofstede responded to criticism stating that surveys are suitable

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however, he accepts that it should not be the only method applied. Even though he agreed that nations are not always appropriate elements of analysis they are the only type of elements available.

On the other hand, Hofstede was a severe critic of Trompenaars' work and mounted an attack on his fellow scholar. He claims that the theory in Trompenaars' book is not supported by data; Hofstede argues that the purpose of research is to replace preconceived concepts with empirical findings. He adds that Trompenaars took two of the dimensions from a book by anthropologists Florence Kluckhohn and Strodtbeck (1961) that to him is acceptable to an extent as the choice of research is influenced by existing literature and preconceived notions. However, Hofstede insists that Trompenaars expose this instrument of responses of a research population; the data collected which would be the means of revising the preconceived notions and formulate a new theory (Hofstede, 1996).

Which culture model do you agree with and why?

How could you use the knowledge gained from studying these theories while working in accommodation facilities, in reception and/or housekeeping department?

CONCLUSION

This chapter have explained the importance of understanding diverse workforce in the hospitality industry and the importance of cross culture communication. In addition it has explained the cultural dimensions of Hofstede and Trompenaars and the relationship between national cultural values and those of organizational cultures. It has also outlined criticisms of both Hofstede's and Trompenaars' research method, particularly the reliability of the findings and finally it discussed the various different approaches related to managing workforce diversity and cultural diversity with significant differences among scholar views.

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Section 7
Critical Issues and Challenges

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Chapter 91
Managing Generational Diversity:
Lessons German Companies Can Learn From Silicon Valley

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ABSTRACT

Germany is undergoing a dramatic demographic change that requires its organizations to make workforce talent of all ages a strategic priority. Practitioners in Germany focus largely on Generation Y employees, because this young employee cohort expresses new and different work-related values. However, diverse attitudes and behaviors of employees in different age groups can potentially lead to conflict and have an overall negative impact on organizational performance. Given US labor legislation and media pressure, managing workforce diversity has been on the agenda of U.S. organizations for many years. Consequently, it can be assumed that there are areas in which German organizations can learn best practices from the U.S. experience. Although data collected from Silicon Valley organizations suggest that taking specific action for managing the multi-generational workforce is currently not a pressing issue in the tech industry, setting up innovative workplaces is an action field in which Germany can learn from its U.S. counterparts.

INTRODUCTION

The ability to manage a multi-generational workforce will become a critical success factor in the future. Organizations in Germany are already experiencing more variety in the requests and expectations from their workforce (Bertelsmann Foundation & Mercer 2012). A particular challenge comes from Generation Y employees – people born between ca. 1980 and 1995. Recent surveys suggest that they are exigent and

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demand, amongst others, more flexibility and autonomy in the workplace as well as more meaningful jobs than previous employee generations (Accenture 2012; Klaffke & Parment 2011).

The expression of concern over the dreadful ways of the young is certainly nothing new. According to a famous quote, often attributed to Socrates, "the children now love luxury; they have bad manners, contempt for authority; they show disrespect for elders and love chatter in place of exercise." If this is a classical and common phenomenon, why do we need to worry about it? The answer lies in the demographic transition and the subsequent change in business conditions. Economic growth potential depends on having sufficient and productive labour. However, as a result of declining fertility rates, most OECD populations are facing a demographic shift with a shrinking and ageing working population.

In managing demographics, German practitioners currently focus on how to change organizational practices to attract Generation Y employees and how to safeguard performance levels of elderly employees through health management. This strategy, however, may not be sufficient given the dramatic demographic change in Germany with a projected decline of its working population by 6 million until 2030. In fact, organizational practices are needed that make talent of any age a strategic priority, allowing organizations to present themselves as employers of choice for every employee generation, while enhancing fruitful collaboration between employees of different ages.

Since workforce diversity has been on U.S. organizations' agendas for quite some time, one can assume U.S. companies to be ahead of their German counterparts in managing generations in the workplace. Therefore, the broad purpose of the present research is to examine generation management at Silicon Valley companies and to suggest areas where German organizations can learn lessons from U.S. experience.

RESEARCH BACKGROUND

More than any other OECD nation, Germany's economy is approaching a demographic shock of a scale not observed since the Middle Ages. By 2030 the German working-age population is expected to decline by 6 m, already skewing sharply older in the coming decade (Robert Bosch Foundation 2013). Due to talent shortage, more than half of Germany's small and medium sized enterprises are expecting a decline in prosperity and growth (Ernst & Young 2013).

To safeguard the employment provision, and thus further ensure Germany's prosperity there are two basic options: a) increase the volume of work performed and b) improve workforce productivity. As immigration has yet been unable to compensate for the loss in labour force, some important reforms have already been put in place to lengthen one's working lifespan. School and academic education were shortened, pension was postponed to the age of 67 and retirement pay was cut thus incentivizing employees to work until the statutory retirement age. Given the implemented changes in both exit age and education system, collaboration time of employees of different age with connected divergent values will increase by roughly 10 years.

Current corporate practice in managing demographics with focus on attracting Generation Y employees and providing health management for elder generations is, for at least three reasons, not sufficient to ensure adequate labour supply. Firstly, preserving physical and psychological health is indisputably the basis for work ability; yet this is not enough for maintaining lifelong high-performance levels. Studies by the Finnish Institute of Occupational Health suggest that organizational work factors, especially team leadership and management practices, are critical elements in productive aging (Ilmarinen 2005). Secondly, we tend to assume that there are advantages associated with age diversity in the workplace such

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as an increase in problem solving skills, an improvement in decision making capacity or in-depth client responsiveness. But empirical evidence is inconsistent. Diverse attitudes and behaviours of employees of different age carry conflict potential, which might lead to a deterioration of labour productivity that organizations need to tackle with sound leadership (Ries et al. 2010; Wegge et al. 2008). Finally, tensions amongst employee groups affect employer attractiveness in the war for talent and might negatively influence the return on personnel marketing spending. Surveys amongst German young professionals suggest that a cooperative and pleasant working environment is especially important to attract and retain young talent (Hurrelmann & Albrecht 2014; Kienbaum 2010). However, if junior employees discover that employer branding is all tinsel and glitter, and expectations are not met by reality, they might soon leave as they tend to be less willing to endure job nuisance with patience.

According to a survey conducted by Bertelsmann Foundation and Mercer (2012), organizations in Germany expect conflict potential resulting from generation diversity; yet, very little attention is currently given to fostering intergenerational cooperation. Diverging attitudes and behaviours of people from different age groups can be explained by pure age related preferences, career or life cycle aspects or generational differences (Bruch et al. 2010). In his concept of generations, the German sociologist Karl Mannheim (1928) distinguishes social generations from family ties, i.e. blood-related generations. Hereafter, a generational cohort represents a grouping of individuals born around the same time who share distinctive socio-historical life events during adolescence and early adulthood. In this critical developmental period, we are very receptive for all sorts of influence: our values and subsequent attitudes also tend to be coined by the particular time spirit and related conditions in society and economy. Although values might still change over time, this early imprint "stays with the individual throughout their lives and is an anchor against which later experiences are interpreted. People are thus fixed in qualitatively different subjective areas" (Scott 2000, p. 356).

There is no final generation scheme for Germany yet. Often, the US generation archetypes are transferred with modifications as regards the baby boomer cohort (Klaffke & Parment 2011). Whereas in the U.S. the baby boom directly started after WWII, this phenomenon appeared in Germany approximately 10 years later. Consequently, in Germany the baby boom cohort comprises of people born between circa 1955 and 1965. As exhibit 1 illustrates, up to five different employee generations can be found in German workplaces.

As with any other model, the generation approach has its limitations. There are difficulties in precisely defining age limits for each cohort and estimating the importance of other factors such as race, culture, geography and class in explaining individual behaviour. Empirical evidence for generational differences in work values is still somewhat preliminary. Much of the existing literature bases its argumentation on non-empirical sources, often in form of anecdotal accounts. However, the few systematic studies on generational differences in the workplace suggest there do exist different perceptions and expectations from employees of different age groups (e.g. Twenge et al 2010).

A recent survey by AOK Institute revealed that there is mutual misjudgement amongst workers of different age groups in Germany (Zok et al. 2014). In addition to misperceptions, recent studies with the German car manufacturer Daimler and Germany's leading railway company Deutsche Bahn identified concrete intergenerational issues in the workplace (Klaffke & Schwarzenbart 2013; Klaffke & Von Wedel 2014). On top of the – almost classical – complaint from younger generations about their senior colleagues' insufficient openness for change and new ways of living, lack of both appreciation and feedback turned out to be major fields of intergenerational debate for junior employees. Whereas elder employees expect to be respected for their seniority and lifetime achievements, Generation Y employees

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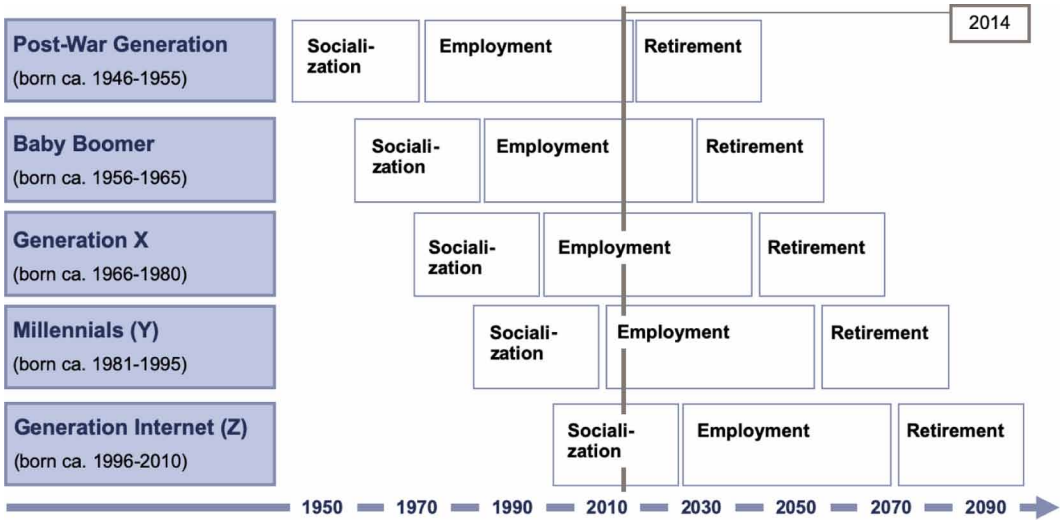
are reluctant to kneel before sheer age; instead, they tend to base their praise on current performance levels. Furthermore, Generation Y employees want to be treated on a par by senior colleagues, who often show appreciation for experience and expertise only, which juniors still must acquire. Seniors also do not understand and are unwilling to comply with Generation Y's expectation that a supervisor shall function as service provider, helping juniors to quickly boost their career development and advancement.

Figure 1. Generations in the Workplace in Germany
(Source: Adapted from Klaffke 2014, p. 12)



To explain tension amongst employees of different age, there has evolved a set of psychological theories focussing on social interaction processes. Often cited in literature are, amongst others, Byrne's (1971) similarity-interaction paradigm, Turner's (1987) self-categorization model, as well as social identity theory proposed by Tajfel and Turner (1986). People feel attracted to others who are like them (e.g. age, gender, ethnicity) thus resulting in increased communication and interaction. Further, to boost self-esteem, individuals tend to form and join sub-groups and perceive their own groups (i.e. in-groups) as superior to the other groups (i.e. out-groups). In-group/out-group-categorization might lead to stereotyping and even overt discrimination, fostering conflict and less cooperation amongst sub-groups. The emergence of opposing sub-groups is assumed to be more likely, when more rigid attributes for group-formation (e.g. age, gender) impede an individual's movement from one sub-group to another (Bruch et al. 2010).

Although organizations see substantial conflict potential as a result of generation diversity, there is still very little practical and academic attention given to managing generations in the workplace and to fostering intergenerational cooperation (Bertelsmann Foundation & Mercer 2012). Generation management aims at effectively addressing the differences in values and expectations of each employee cohort. Generation management thus represents a facet of diversity management which, as a management concept, focuses on respect and aims at embracing individual differences to turn them into organizational assets (Thomas & Ely 1996). Beyond legal requirements for equal opportunity employment and fair treatment through diversity management organizations can increase their attractiveness as employers amongst each employee generation.

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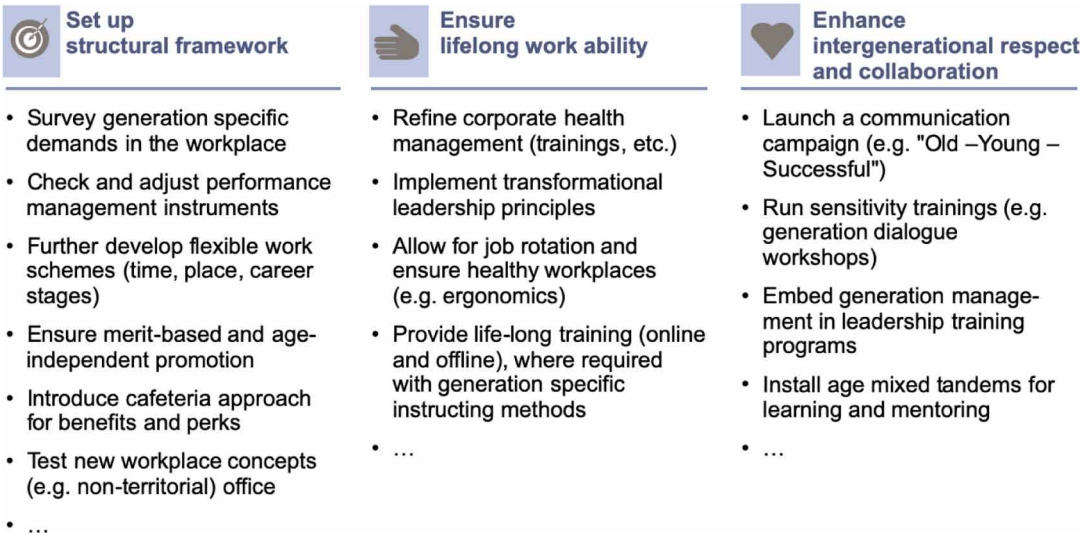
To empirically identify a framework for implementing generation management in Germany, we have, as a first step, conducted a pre-study with the car manufacturer, Daimler, in the German automotive industry (Klaffke & Schwarzenbart 2013). Figure 2 shows the three major action fields identified in the study.

Figure 2. Action fields for implementing Generation Management
(Source: Adapted from Klaffke & Schwarzenbart 2013, p. 46)



Accordingly, generation management requires a structural framework of Human Resource Management principles and practices that allow accommodating generation specific needs (e.g.: age-independent promotion, choices as regards to perks and benefits, new office concepts.). It should also support lifelong work ability, for instance through corporate health management programs and personnel development initiatives (in both online and offline formats). Finally, and perhaps most importantly, it should create awareness of generational differences and mobilize employees into intergenerational collaboration.

As for diversity management in general, there is no "best way" to manage generational differences in the workplace. To be effective, diversity management must consider business needs and workforce issues, as well as situational factors such as workplace environment or the stage of development regarding workplace diversity. Therefore, diversity initiatives cannot only be different from organization to organization, but also from country to country.

To systematically develop a set of generation management actions that organizations can refer to when designing their individual programs, it is beneficial to study practices in countries believed to be experienced in generation management and to evaluate whether and how their practices could be adopted domestically. In this respect, focusing on U.S. practice is assumed to allow for valuable insights on bridging potential generational gaps and fostering a generations-friendly culture. Managing workforce diversity has been on U.S. organizations' agendas for quite some time, whereas in Germany it is still a relatively new undertaking. The roots of diversity management as a comprehensive management approach in the U.S. go back to the Civil Rights Movement, commencing in the mid-1950s, and consecutive labour legislations. Also, extensive writing on generational differences in work values and consecutive

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suggestions on how to manage generations at work has emerged in the U.S. (e.g. Lancaster & Stillman 2003; Zemke, Raines & Filipzcak 1999) earlier than in Germany (e.g. Oertel 2007; Bruch et al. 2010).

As workforce diversity can be recognized as a source of creativity and innovation there is reason to assume that, especially in creative clusters such as Silicon Valley in California, it has contributed to prosperity and sustained competitive advantage (Florida 2002). Therefore, Silicon Valley companies were selected to identify areas in which German organizations can potentially learn from the U.S. experience in managing generations in the workplace.

METHOD

As research on generation diversity and associated management practices is still emerging, this project took an exploratory route. Representatives from organizations in the Bay Area were invited for in-depth interviews (cf. appendix 1).

At the same time interview requests to Bay Area companies and organizations were sent out the *San Francisco Chronicle* published an article titled, "Age left out of the diversity discussion" (Brown 2014). It noted that most Silicon Valley companies were reluctant in releasing age related data of their workforce. "Silicon Valley's conversation about diversity has revolved chiefly around gender and race, although the stereo-type of the techie as white, male and young has written out the over-40 set as well" (Brown 2014). Further it was mentioned that "there have been several age discrimination lawsuits against major companies, and frequent reports of employers and funders passing on older workers in favour of younger ones" (Brown 2014). This public debate on ageism in Silicon Valley companies might be a reason why there was hardly any reaction to the interview request: Only five companies agreed on an interview on generation management; Apple, Google, Pixar and Virgin America at least sent regrets. Thus, to explore the topic based on secondary data, additional focus interviews were conducted with Great Place to Work, Inc.[1], The Silicon Valley Leadership Group[2] and Steelcase Research.

In total eight focused interviews of a length of 1 to 1.5 hours were conducted in August and September of 2014. A semi-structured questionnaire served as a guideline for the interview (cf. appendix 2). The interview questions were taken from the survey conducted with Daimler amongst German car manufacturers. They looked at generation specificities in career and competence management, in managing performance as well as in managing the employee-employer relation. One question explicitly explored new approaches in workplace design as in the study with Daimler setting up innovative office configurations was found to be an important and new factor in engaging employees.

All interviews were conducted as face-to-face-conversations at the respondents' offices. During the interviews, notes were taken that were worked up directly after the meeting. The survey data were analysed by content based on the generation management framework developed with Daimler. Findings were discussed, first in a workshop-lecture at UC Berkeley's Institute of European Studies in October 2014, and then they were reviewed with company representatives in Germany.

FINDINGS

The surveyed companies mentioned several Human Resource Management practices, which had been already identified in the study with Daimler (cf. exhibit 1). They mostly concerned generation-unspecific

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actions that could in general contribute to enhancing employer attractiveness. These included merit-based pay and promotion, as well as offers of individual contributor career paths besides the traditional management track. Management and individual contributor career paths were often handled similarly as regards compensation; yet there were stated to exist fewer senior positions in the individual contributor line. In this regard, it was also mentioned that in companies offering individual contributor career paths, age would less negatively impact promotion opportunities.

Flex-staffing (i.e. adjusting work time to employees' needs), as well as feedback and fun, made up important elements of the work life in most of the surveyed companies. Although per se flexible working hours were allowed, most companies outlined a preference to have their workforce in the office. Therefore, there was rarely a rule specifying a specific weekday recurrently set as a home office day; instead, work flexibility had to be occasionally agreed upon with the respective supervisor. Furthermore, home office allowance often was connected to an employee's commitment to be available. In one company, employees were informed that whenever their attendance rate dropped under 40 percent, their assigned desk would be taken away. As regards leader-follower interactions, some firms monitored through engagement surveys whether employees feel that there was sufficient feedback given. In addition to all-firm events, managers, in many cases, were reported to have a team and management effectiveness budget for fun activities and celebration of success in their respective teams (e.g. team dinner).

HRM provisions considering employee generations' potential needs were yet rarely noted. Where generation specific HRM practices existed, they focused on Generation Y (e.g. the "parent's day" at Google). A cafeteria approach, i.e. accommodating employees' preferences regarding non-monetary incentives, was rarely used.

Flexibility was typically allowed regarding social benefits, e.g. contribution to health care, life insurance or retirement packages. For perks, however, there seemed to be in total very little in place, i.e. an employee typically was not offered to choose between childcare or elderly care as additional fringe benefits.

Also, specific psychological assistance in preparing for an employee's retirement (e.g. with seminars) was not offered; as a reason, one respondent gave the meritocracy approach of Silicon Valley firms being at odds with an entitlement culture. As employees typically received a competitive salary, they were expected to solve their life issues on their own.

Concerning personnel development, all interviewees stated employees could participate in on-the-job training and seminars (mostly online education). No evidence could be found of an uneven distribution of training hours or development budgets based on the employees' age. However, learning approaches, methods and tools were reported not to consider elderly workers' learning preferences and thus, in general, did not cater to an age diverse workforce. In this regard, some respondents mentioned the relatively young demographic structure of their firms allowed them to neglect age effects in corporate education.

To raise awareness for diversity and to enhance mutual understanding, all surveyed companies ran diversity trainings. However, "generation" as a specific facet of workforce diversity or challenges in intergenerational collaboration played a secondary role. If at all present, leadership training on generation management considered potential clashes between Generation Y and Baby Boomers leaving Generation X out of the discussion. One interviewee mentioned some sort of panel discussion, in which Generation Y employees were brought in for dialogue with Baby Boomer executives. Also reverse-mentoring was said to exist in firms.

New office concepts and workplace design were considered in all surveyed companies as an integral element of their workforce strategy. Although interviewees believed that office design per se is not based on generational preferences but on work requirements, they saw it as an important factor in attracting and

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engaging Generation Y employees. According to research by one respondent Generation Y employees have a preference for open and transparent environments, they are "tuned for constant connection and collaboration", and they want to have autonomy in choosing work time, work location and workplace. Another interviewee mentioned that his company had been losing on Generation Y talent because it had not been offering a fun and state-of-the-art work environment.

All firms had experimented over the last years with innovative office configurations enhancing a culture of collaboration, speed and co-creation; consequently, allowing for substantial floor capacity savings while fostering employees' identification with the corporate culture. In all companies the workplace design had been moved away from the traditional U.S. high wall cubicle configuration to open space offices including walk-in meeting rooms, telephone booths, lounge areas for informal meetings or even yoga and wellness centres. The guiding idea behind office design was to set up an "ecosystem" of different workplace options employees can choose from according to the individual task requirements. One interviewee noted that "sitting [has come] to be the new smoking", most office layouts were reported to be considerate of employees' physical activity needs. For instance, to encourage people to move around, one firm had built an open staircase to connect two floors, implemented different room types on the respective floors and made different snacks available on different floors. Further, in one company, most employees worked in a non-territorial office setting, i.e. they did not have an assigned workstation. Reasons given were to move people out of their comfort zone, to make them tidy up their workplace at the end of every business day and to avoid any sense of entitlement.

According to the respondents, transitioning from a traditional office to an open configuration required substantial change management effort and could not be carried out as a mere facility management project with focus on floor capacity reduction. This included both employee mobilization and change in leadership towards a result orientation. Besides communication about the new office's benefits and the mode of transition, mobilization activities focused on involving employees in co-creating their new office space. For instance, in one firm each team had been given a decorating budget to set up a themed office "neighbourhood" (i.e. an area in between team sections for informal communication) and employees had turned them into a cinema, a spa or a sports bar neighbourhood. As the "no assigned seat concept" requires employees to have access to storage areas, one firm implemented lockers, like those at colleges, and employees were invited for locker decoration contests.

Regarding leadership, executive training, in some cases, was offered and covered topics included how to manage employees without direct and physical supervision. In addition, supervisors were required to act as a role model and to sit in the open desk area. Finally, regular surveys were conducted to learn what employees appreciated in the new office settings and to identify areas for improvement.

Whereas earlier new office concepts focused on moving employees in open space settings to push floor capacity savings, now interviewees observed a trend for more privacy. According to them privacy, however, does not mean having a separate office, but could take on different spatial forms (e.g. have glass walls to separate office zones, install enclaves for focus work, use library spaces for heads-down activities or set up dedicated rooms for recharging in silence). Further, one respondent mentioned that there was a need for a more fluid office arrangement, allowing employees and teams through mobile furniture (e.g. desks and chairs on wheels, movable walls) to quickly change the office configuration. Finally, companies started to cut back on the number of "non-assigned" desks, as they had discovered that people need anchoring and personalization.

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CONCLUSION

Given the small number of surveyed companies, the sample composition and its explorative approach, the analysis does have limitations. However, since the Silicon Leadership Group and Great Place to Work with their wide experience and insider's knowledge were included in the study, two main conclusions might be drawn from the findings.

First, at least as Silicon Valley enterprises are regarded, this study does not support the assumption that in managing generations U.S. companies lie ahead of their German counterparts. The survey could not find any specific U.S. practice beyond the actions already identified in the pre-study with Daimler. As there is barely any initiative taken to enhance intergenerational collaboration, the age and generation focus seems to be irrelevant in the Silicon Valley companies interviewed. This finding tends to support the *San Francisco Chronicle's* reporting on age being left out of the diversity discussion.

Further, the survey indicates evidence for a general reservation amongst U.S. employers to offer a menu of voluntary benefits and perks, employees can choose from according to their needs. This, however, conflicts with the general idea of generation management which requires companies to dispose of a variety of HR instruments in order to position themselves as employer of choice amongst every generation. According to one respondent, in the U.S. employee private lives and work are rather disjointed and a company would rather move business to a different location than offering specific perks.

The second conclusion concerns the importance of generation management for future office design. In building the office and the workplace of the future, German companies can learn substantial lessons from the U.S., since in Germany private or shared offices are still prevalent. Many visits of German corporate and governmental delegations to Silicon Valley companies give obvious proof of the already identified learning potential.

From a Human Resource Management perspective, the idea of incorporating the workplace strategy in the workforce strategy is important given Germany's expected labour shortage. However, to use the office as a further strategic tool in talent management, new office configurations in Germany cannot be confined to meet one specific generation group's requirements (i.e. typically Generation Y's requirements), but rather they should be attractive for talents of all ages. Most German Baby Boomers and Generation X employees became socialized in companies with private cells or shared offices, and they still tend to consider a private office as a status symbol like a company car or a meaningful job title. Thus, in managing the multi-generational workforce, it is indispensable to offer employees choices for task execution. This firstly requires acknowledging employees' divergent needs for privacy and then refraining from pushing everybody for non-territorial offices. Furthermore, a staggered approach in transitioning to new office settings could reduce employee resistance and make the office a system for accommodating and fostering both the work and the growth of different generations. In this, according to one interviewee, Generation Y could take on a key role as a trendsetter: "Other generations might observe the young employees' behaviours in the new office and gravitate to the new mode of working".

This, however, needs to be accompanied by thoughtful change management measures such as regular exchanges between first movers and followers and cross-mentoring between generations which will, in turn, enhance mutual understanding in the workplace and contribute to fruitful intergenerational collaboration.

This research was able to identify data from which companies in both the U.S. and Germany can learn in relation to intergenerational management. American companies, specifically those in the Silicon Valley, are altering their workforce environment to give their employees workplace customization

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in effort to improve interaction and productivity. Given Germany's demographic challenges, German companies, on the other hand, are perhaps more in tune with different generational work groups and focus on employee retention and satisfaction.

Multigenerational workforce management is a complex topic that will undoubtedly further on affect companies in both the U.S. and Germany. Especially with the advent of the tech-savvy Generation Z personnel practices again will have to be reviewed and consequently adjusted. In the view of the growing popularity of mobile apps, for example, online education probably will play an increasingly important role as a vehicle by which companies might train managers and staff in how to effectively benefit from generation diversity in the workplace. Hence, future studies on generation diversity could, for example, shed light on generational differences in online learning and the associated challenges in designing effective qualification formats. In any case, exchange of research data and implementation of studies in multigenerational workforce management between Germany and the U.S. stimulate, as could be shown, transatlantic learning and thus aid in improving current and developing new and effective strategies for managing the labour force of the future.

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ENDNOTES

[1] Great Place to Work Inc. is a global human resources management consultancy and research firm, headquartered in San Francisco, that conducts an annual study of workplace attractiveness.

[2] The Silicon Valley Leadership Group (SVLG) represents as a non-profit advocacy group more than 390 Silicon Valley's companies.

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APPENDIX

Companies and Organizations Invited to the Survey

- Adobe Systems
- AMD
- Apple Inc.
- Applied Materials
- Bank of the West
- Buck Institute for Age Research
- Charles Schwab
- Chevron
- Cisco Systems
- eBay
- Electronic Arts
- Facebook
- Gap Inc.
- Genentech
- Google
- Great Place to Work
- Hewlett Packard
- Intel
- Kaiser Permanente
- Levi Strauss & Co
- Logitech
- Netflix
- One Workplace
- Oracle
- PGE
- Pixar
- Robert Half International
- Safeway
- Salesforce.com
- SAP
- Silicon Valley Leadership Group
- Steelcase
- SunEdison
- Tesla
- The North Face
- Trimble
- Twitter
- Union Bank
- Virgin America

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- Visa, Inc
- Vmware
- Wells Fargo Bank
- Williams-Sonoma
- Yahoo!

Interview Questions (Guideline)

A. Career & Competence Management _____
   - A.1 In which way does your company allow and prepare "cohort 50 plus" employees for promotion at a later stage in life (e.g. mentoring women having raised children)?
   - A.2 Which career models do you offer, and how comparable are they in e.g. benefits, perks etc.?
   - A.3 How do your company's leadership/executive trainings cover generation diversity and its management challenges?
   - A.4 In which way does your company consider employees' age in personnel development?
   - A.5 How different are your company's personnel development programs for younger employees from development measures provided to elder staff?
   - A.6 How does your company ensure and manage knowledge transfer between employee generations (e.g. tandems, mentoring)?

B. Performance Management _____
   - B.1 In which way does your company consider generational differences in its performance management?
   - B.2 How does your company's workplace and office design reflect generational differences in working style preferences (e.g. co-working spaces vs. traditional office)?
   - B.3 In which way has your company in the last years adopted a modern office configuration (e.g. flexible workspace, open lounge areas, mobile/home office)?
   - B.4 Which choices is your company offering regarding worktime and work place flexibility; and how does your company manage the challenges associated with mobile and flexitime working (e.g. restriction of home office days)?
   - B.5 In which way does your company allow employees to flexibly choose benefits and perks according to their preferences (e.g. Cafeteria model)?
   - B.6 How does your company allow for "fun" in the workplace?

C. Relationship Management _____
   - C.1 In which way does your company foster intergenerational understanding amongst managers/ workforce (e.g. campaign on specific wants of generation Y, reverse-mentoring)?
   - C.2 In which way does your company offer specific benefits according to employee life stages (e.g. elder care, kindergarten support, etc.)?
   - C.3 What options does your company offer for an employee's transitioning to retirement (e.g. part-time above an age of 60)?
   - C.4 How does your company prepare elder workers for the transition to retirement?
   - C.5 In which way does your company survey need differences amongst employee generations?

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Chapter 92
Veterans Should Be Included Too:
Strategies for Promoting Diversity of Veterans in Organizations

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ABSTRACT

The transitioning of veterans from the military world to the civilian world and by extension the civilian workforce is a critical career transition. Despite their motivation and resilience, veterans still encounter a multiplicity of challenges when transitioning to the civilian workforce, which quite often has a rippling impact on their attainment of employment, job retention, and career development within the civilian sector. An added layer to the transitional challenge for veterans is organizational resistance to promote diversity and inclusion policies and practices, specifically regarding veterans. On this premise, this chapter aims to: 1) Discuss the transitional challenges of veterans to the civilian workforce and 2) Provide implementation strategies at an organizational level to promote diversity and inclusion, specifically regarding veterans.

INTRODUCTION

The management of diversity within the business environment is crucial to success of an organization (Byrd, 2014; Byrd & Scott, 2018; Byrd & Hughes, 2018; Johnson, 2008; Thomas, 2005). If properly managed, diversity can be extremely advantageous Davis et al., 2016; Rice, 1994; Robinson & Dechant, 1997). As posit by Foster and Harris (2005), diversity can create a competitive advantage from an organizational perspective by helping to recruit and retain the best employees. Diversity has increased creativity at an organizational level (Abaker, Al-Titi, & Al-Nasr 2019), and enhanced decision-making

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(Foster & Harris, 2005). However, if not properly managed, diversity can be the underpinning for conflict, which has a rippling negative impact on efficiency, quality of work innovation and increased employee turnover (Abaker, Al-Titi, & Al-Nasr 2019).

Within recent years, there has been much emphasis by leaders as it relates to the diversification of organizations. According to Liggans, Attoh, Gong, Chase, Clark, &. Russell (2018) "as diversity within organizations continues to rise, leaders are increasingly focused on integrating the diverse perspectives of various demographic groups into the organization and empowering all individuals" (p.140). Hence, organizations focal point should not be solely diversity but inclusion of all employees. While there is a vast amount of literature as it relates to diversity, organizational diversity, diversity management, related policies and procedures, the concept of organizational inclusion is unparalleled and has not been thoroughly explored (Brimhall et al., 2017; Nair & Vohra, 2015;Liggans, Attoh, Gong, Chase, Clark, &. Russell, 2018). Scholars have described the practice of inclusion in comparison to diversity in differing ways. For example, Ferdman (2014) described inclusion as "creating and embedding organizational, leadership, and interpersonal practices that result in a sense of safety, full belonging, participation, and voice across the range of diversity dimensions, without requiring assimilation or loss of valued identities" (p. 44); and Roberson (2006) described inclusion as the removal of obstacles that prevent employees from contributing. In more recent years, Shore et al., (2011) defined inclusion as "the degree to which an employee perceives that he or she is an esteemed member of the work group through experiencing treatment that satisfies his or her needs for belongingness and uniqueness" (p. 1265). Despite the varying versions of defining inclusion, the common theme that emerged regarding inclusion is the concept of employees being recognized as equals by their organization and opportunities exist that allows them to positively contribute, be fully engaged, and fitting in. Inclusion must occur despite whatever difference may exist at an individual level. On this premise, it is paramount for organizations to have policies, practices, resources, and an organizational culture that promotes inclusion. A misconception is that once organization employees appears to represent diverse demographic grouping, the organization is one that promotes diversity and inclusion. An organization can promote diversity, but the practice of diversity and inclusion is not authentic if there are no interventions or initiatives that support inclusion.

BACKGROUND

The Department of Veterans Affairs Fast Facts (2018) outlined that there are approximately 18.2 million veterans in the United States. According to the Census Bureau, these veterans make up approximately 7.6% of the population in the United States. The veteran employee has often been classified as being equipped with a unique skill set, vast amount of training, experiences, impeccable work ethics, and characteristics (Minnis, 2017) all of which are beneficial to an organization. However, upon entering the civilian workforce, unlike the civilian employee, veterans are equipped with an added layer of challenges regarding social acclimation and acceptability within the "civilian world". Stereotypes as it relates to their personal, psychological, and in some instance, physical abilities, and perceived low educational level often contributes to that division within the civilian workforce. Considering this, veterans are classified as a diverse group that warrants organization not only to put forward diversification initiatives but also inclusion intervention. They are a protected class group within the United States Federal Protection guidelines (American with Disabilities Act, (1990); Uniformed Services Employment and Reemployment Rights Act (1994); Vietnam Era Veterans Readjustment Act (1974); Age Discrimina-

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tion in Employment Act (1967). The purpose of this chapter is to: a) Discuss the transitional challenges of veterans as an underpinning of organizational diversity and inclusion in the civilian workforce, and b) Discuss strategies and approaches for promoting inclusion of veterans in the civilian organization.

CHALLENGES OF VETERANS TRANSITIONING TO THE CIVILIAN WORKFORCE

Although there might be a misconception regarding the number of veterans employed within the U.S civilian labor force, the U. S. Department of Labor (2017), provides great insight indicating over 10.6 million veterans employed in 2016 and of which, 3.2 million had served as active duty since September 2001. According to Stern (2017), by the year 2020, more than five million veterans are expected to return to the community and the civilian workforce. Stern (2017) further elaborated that veterans' connection to the labor force affords the quickest opportunity for a successful transition back home. Unfortunately, veterans, indicate that their biggest challenge is finding a job upon their return. McAllister, Mackey, Hackney, & Perrewe (2015), echoed this sentiment and reported that 44 percent of veterans' reintegration into the workplace (civilian workplace) involves great difficulties. As it relates to female veterans, there are higher unemployment rates, 7.3 percent in comparison to 5.1 percent, when compared to non-veteran females (U.S. Department of Labor, Bureau of Labor Statistics, 2016). Such employment challenges can be a direct result of difficulties that are more evident in some veterans compared to civilians such as post-traumatic stress disorder (PTSD) (Kukla, Bofils, & Salyers, 2015), mental and medical challenges and substance abuse problems (Humensky, Jordan, Stroupe, & Hynes, 2013). On this premise, it is imperative that organizations with the goal of promoting diversity and inclusion of veterans, in particular, HRD professionals, are not only aware of but recognize the value and unique skillset veterans possess (Hughes, Lusk, & Strause, 2016). Additionally, it is crucial that HRD professionals are knowledgeable of how to attract these veterans, be equipped with strategies and best practices to maintain, and possess the ability to effectively utilize the veterans (Hughes, Lusk, & Strause, 2016); while diversifying and promoting inclusion of veterans in their organizations.

From an employer's perspective, the overarching challenge regarding attracting and recruiting veterans is the misunderstanding and misconceptions regarding veterans' skillset, and overall military experiences (Davis and Minnis, 2017). More specifically, a challenge exists by employers trying to understand and translate the skillset and experiences presented by veterans on their resume'. This often has a rippling impact, which lends to the misunderstanding of how to adequately align the veterans' skillset and experience effectively within the workplace for the betterment of the organization and the veteran employee. In some instance, this lack of understanding minimizes the veterans' opportunity for consideration for employment. This level of misconception and misunderstanding lends to Hodges' (2018) belief that "while good intentions are laudable…if an individual has a desire to help but does not understand the population they intend to aid, their good intentions run the risk of going astray" (p. 89). This creates a recruitment challenge for the employer as it relates to veterans. Loughran (2014), echoes this sentiment adding one of the greatest challenges of employers when attracting and/or recruiting and hiring veterans is determining, based on their organization, how best to utilize the skills, talents, and potential of diverse individuals and organizational innovation to accelerate the business organization.

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Negative Stereotypes and Misconceptions of Veterans

In addition to veterans' skillset, training and experiences being misunderstood, veterans are often faced with the challenge of having to defend negative stereotypes associated with being a veteran to their civilian counterparts within the civilian workforce (Prudential Financial Inc. 2012). This could be more challenging for the veteran who would have spent more time in the service and now transitioning to the civilian workforce as an older employee (Stone & Stone, 2015; Walker, 2013; Johnston et al. 2010). Hence, in addition to veteran related stereotypes, the veterans now have to defend stereotypes associated with being an older employee. Further, there is a misconception that all veterans have mental concerns recently referred to as "invisible wounds" (Aikins, Golub, & Bennett, 2015). This misconception in addition to mental stereotypes makes not only recruitment of veterans but also career transitioning of veterans more challenging. Although there is no supporting evidence that all veterans have invisible, wounds such stereotypes still negatively impacts veterans' opportunity for employment (Hayden & Buzzetta, 2014; Stone & Colella, 1996). According to the Department of Veteran Affairs (2016), it is estimated that only 11-20% of Post -9/11 veterans had some form of service-related illness.

According to Minnis (2017), there is often a misconception regarding training and prior experience obtained in the military by civilian hiring manager. The underpinning for this misconception is the limited knowledge regarding the quality and extent of training most veterans bring to the civilian workforce. More importantly, how to transfer and/or apply the knowledge, skills and abilities obtained in the military to a civilian setting quite often presents a challenge during the hiring process of veterans (Davis & Minnis, 2017).

From the veterans' perspective, the major challenge as it relates to transitioning to the civilian workforce is their ability to articulate skills and qualification obtained in the military to a resume' which can be effectively understood and translated by employers (Sargent, 2014). Veterans often need assistance with translating the skills, training, and experiences from military jargons to a language that can be understood by the civilian employer (Sargent, 2014; Troutman & Gagnon, 2014).) This creates a challenge in the attraction and/or recruitment and selection process of veterans.

While there are a variety of support systems in place for transitional veterans to the civilian workforce specifically through the VA, in some instances, some veterans are not aware of where to receive transitional support (Hunter-Johnson, 2017). Additionally, there are some gender restrictive support systems for veterans (Szelwach, et al. 2011). This creates unwarranted stress and impedes the career transitional process for veterans (Szelwach, et al. 2011). This lack of support coupled with negative stereotypes hinders the transitional process (Hunter-Johnson, 2017).

Considering the transitional challenges encountered by the veteran employee and misconceptions by some employers regarding transferable skills of the veteran, stereotypes and misconceptions by civilian employees often contributes to exclusion of veterans from the civilian workforce (Davis & Minnis, 2017). However, it is paramount that HRD professionals utilize the transitional challenges of the veterans as a foundation to introduce and develop inclusion interventions that create a space for the veteran within the civilian workforce. Some questions that should be considered by HRD professionals as it relates to veterans are: Is the organizations promoting diversity and inclusion as it relates to veterans? Do veterans have a sense of belonging in the organization? Are veterans encouraged to participate and engage? Are organizations equipped to address the transitional challenges associated with the veteran worker? Are there policies, practices, and procedures in place that address diversity and inclusion of veteran employees in accordance with what federal law already requires?

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SOLUTIONS AND RECOMMENDATIONS

Strategies and Approaches for Promoting Inclusion of Veterans in Civilian Organization

Employee Socialization and Orientation

The initial workplace learning and development intervention should be the veteran employee onboarding/orientation process. It is paramount to build a strong veteran onboarding/orientation/socialization program to ensure veteran recruitment and hiring initiatives are successful. It also provides an opportunity for the newly hired veterans to feel invested within their new position, team, and by extension, the organization. To promote not only diversity and inclusion but also a veteran-friendly environment which should be a reflection of the organization. The training should take into consideration the transitional challenges with the view of addressing these unique needs. On this premise, before such training intervention, it is paramount that HRD professionals are properly trained and knowledgeable as it relates to military culture, training and development, and language. The Harvard Business Review recommends extending training to all managers, recruiters, and leaders about military culture and language (Eisenhardt, Kahwajy, & Bourgeois, 1997)

As an adaptation to the organization is not only the expectation of the veteran employee, but it is also the expectation that the HRD professionals understand the needs of veteran employees. This knowledge of military culture, training and development, and language would lend to a smoother transitional period for both veteran employees and HRD professionals. It can also serve as a reinforcement for training other civilian employees and should be helpful in the event they may encounter communication gaps with their veteran colleagues. Also, HRD professionals being equipped with previous knowledge regarding the military and other possible skillsets, qualifications, and training of veteran employees would be beneficial with ensuring that veteran employees are properly assigned to the right position, hence promoting the ideal person/environment fit within the organization. This can have a positive impact as it relates to maintaining the veteran workers' development and retention in a specific position.

In addition to prior knowledge regarding the military as the groundwork of this training initiative, it is equally paramount that HRD professionals are knowledgeable about how to provide training to non-traditional adult learners (Werner & DeSione, 2012). Knowles' (1990) principles of adult learning suggested ways to teach adult learners by considering methods of relaying the information i.e. incorporation of technology, amount of information, sequencing of information (space vs. mass learning opportunities); learning environment condition; age related practical examples; age related jargons; learning styles; and prior learning experiences. Additionally, efforts should be made by the HRD professional to promote self-directed learning practice. Likewise, it is equally important to provide training with transfer of training as the underpinning.

The Socialization Process

According to Werner and DeSimone (2012), organizational socialization is defined as "the process by which an individual acquires the social knowledge and skills necessary to assume an organizational role" (p. 257). In this regards, HRD professionals should seek to establish creative strategies, specifically crafted interventions, to ensure that veteran employees, who may initially be considered an outsider by current

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employees, is provided resources and training to adjust to an accepted employee of the organization. Establishing customized onboarding, socialization, and orientation training for veterans are options for HRD professionals to consider (Saks & Gruman, 2012).

During the socialization process, it is essential that HRD professionals thoroughly discuss organizational roles, group norms, culture, and expectations to assist older veteran employees with feeling welcome and included in the new work environment. It is also paramount during this phase that HRD professionals discuss veteran friendly HR policies and procedures (Werner & DeSimone 2012). They must make all employees aware that Ageism and Disability are federally protected statuses according to the Age Discrimination in Employment Act of 1967. These activities will also assist veteran employees who may be experiencing culture shock in their new civilian work environment.

It will be equally beneficial if civilians, within the organization, are equipped with some background information regarding the military, skills, and training obtained by veterans. They can also benefit from understanding how veterans' experiences apply to the workplace. This may help minimize negative stereotypes and stigmas civilian employees may have regarding veteran workers. Adequate, veteran friendly training initiatives should have already been extended to the general employee population (Stone, Lengnick-Hall, & Muldoon, 2017). During this process, it is equally critical that HRD professionals take into consideration the transitional challenges of the veteran employee and utilize this as a foundational platform for the socialization process of the veteran employee. Additionally, while emphasis is on the veteran employee, it is paramount that employees who may me transferring, whether from one department to another or from one location to another also part-take in this process. Emphasis should be placed on strategies to assist the veterans with the acclimation process to the civilian workforce. For example, there should be training sessions with a focus on the value of veteran workers and the qualities veteran workers brings to the organization (Hardison et. al, 2015). Training sessions can also focus on organization goals, missions, values, strategic plan, and the organization's policies and procedures regarding diversity and inclusion. The training intervention's mode of delivery for this type of training content should not be limited solely to online or computer generated but should be facilitated face-to-face and over weeks and not hours to ensure proper acclimation (Hunter-Johnson, 2018). Additionally, these type of training interventions should include principles of adult learning (Knowles, 1990). Proper socialization into an organization can have possible positive outcomes such as increased organizational commitment (Allen & Shanock, 2013), reduced employee turnover (Yang, 2008), and enhanced employee performance (Beheshtifar, Rashidi, & Nekoie-Moghadam, 2011) regarding the veteran employee. Socialization into the work environment can serve as a great strategy for retention of veterans as civilian employees (Ford, 2017).

Mentoring Programs

Werner and DeSimone (2012), defines mentoring as "a relationship between a junior and senior member of an organization that contributes to the career development of both members" (p. 424). A mentoring program can contribute to the career development and psychosocial needs of the older veteran employee and can mimic an informal or formal approach (Burton Blatt Institute, 2013; Bynum, 2015; Kirchner & Minnis, 2018; Monster, 2016). According to Zachary (2009), mentoring programs can be extremely beneficial to the organization including facilitating the socialization of new employees, reducing employee turnover, minimizing midcareer adjustments, enhancing the transfer of knowledge and values, and facilitating adjustment to retirement. Caution should be given to the approach of the mentoring program

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regarding whether the program is formal or informal (Burton Blatt Institute, 2013; Kirchner & Minnis, 2018; Monster, 2016) and an examination of the impact of the age difference between the mentor and mentee (Finkelstein et al., 2003). This could be a beneficial strategy for maintaining the development of older veteran employees and civilian employees.

Providing a veteran employee-mentoring program within an organization where veterans mentor other veterans can prove to be beneficial not only to the organization but also to the veteran employee (McLean, 2016). Some benefits associated with a veteran mentoring program include promoting a smoother transition of the veteran employee to the civilian workforce. It can also promote inclusivity in the workplace between veterans and civilian employees. Further, a veteran mentoring program provides an opportunity for veteran employees to network with other veteran employees, provide a potential confidence boost, and could unearth untapped employee skills and potential within the workplace. Additionally, a veteran mentor can assist the veteran employee with career transitional challenges and concerns that cannot, necessarily, be addressed by civilian employees (McLean, 2016) Lastly, a veteran mentor can assist with career opportunities, career advancement and establishing a definitive career path within the organization.

Strategies for Developing a Veteran Employee Mentoring Program

There are some strategies as described in this section that may be helpful to HRD professionals as they seek to develop a veteran employee mentoring program. The strategies are networking, veteran affiliate group formation, and employee counselling and wellness programs. These strategies can all contribute to better inclusion of veterans within the civilian workplace.

Networking

Connecting veterans within the organization with other veteran employees is important. As HRD professionals, it is imperative that consideration is given to pairing of the mentor and the mentee as it relates to the position of authority within the organization. Taking into consideration the veteran employee familiarity and respect for the chain of command/ hierarchical structure, it is suggested that both the mentor and mentee be at similar levels within the organization (Eells, 2017). Pairing a senior employee (position of authority) with a veteran (who may be in a junior position) may create a barrier to the intended learning process between the mentor and mentee. Hence, possibly resulting in negative ramifications and the mentor/mentee relationship. Caution should be given to the age difference of the mentor in relation to the mentee.

Veteran Affiliate Group

Another mentoring approach can be through a veteran affiliate group of employees within the workplace. The HRD professional can facilitate any needs or special needs of this special interest group of volunteers. It is paramount as the HRD professional to ensure that participants of these groups share similar goals and objectives. This will contribute to strengthening that networking among veterans. A veteran affinity group is classified as a group whose focus is to assist new hired veterans as it relates to acclimation, increase morale and a level of comfort (Bell, Harvey, & Freeman, 2016).

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Employee Counselling and Wellness Programs

Most major organization invests in employee counseling and wellness services for the overall well-being of the employees from an emotional and physical health perspective (Werner and DeSimone, 2012). Such programs can mirror a one-time discussion with a professional, a myriad of sessions, on-site or referrals. Examples of employee wellness programs, which are also effective of promotion of health and healthy living (a great maintenance strategy for older workers) include: fitness centers, yoga class, pharmaceuticals services, therapy, substance abuse services, health related seminars, care giving and much more Werner and DeSimone (2012). Employee wellness programs can be categorized into six components: a) Problem identification, b) Education, c) Referral, d) Counseling, e) Treatment/Intervention and, f) Follow-Up (Werner & DeSimone, 2012, p. 359). However, as HRD professionals, it is imperative that an organization that is focused on maintaining veteran employees craft a unique employee wellness program that not only addresses the transitional needs of the veteran but also any acclimation needs, physical, emotional and mental needs associated with the previous deployment (Tanielian et al., 2008). Some possible suggestions with regards to employee wellness programs include but are not limited to: veteran transitional programs, veteran support groups, veteran resources regarding transition, workshops and training session in collaboration with the Veteran Affairs, Veterans Employment Center and Skills Bridge, and any other federal resources and programs.

Also, organizations, facilitated by HRD professionals, can establish veteran retention programs which are driven by research regarding best practices coupled with empirical research with a focal point on veteran career transitional challenges, support systems needed, job satisfaction, retention, and acclimation to the civilian workforce culture. An extension of this veteran retention program can be a veteran-centric career map (Ford, 2017) to assist veterans. To track the progress and success of the veteran employee, HRD professionals should incorporate veteran-centric career mapping tracking system with the view of tracking the progress of the older veteran employee success regarding all integration initiatives (Ford, 2017). Last, to promote a deeper understanding of veterans' transition and retention to the civilian workforce, HRD professionals can provide career development, organizational education, and hiring support. This will also contribute to easing the career transition of veterans while contributing to veteran career transition needs (Minnis, 2017) hence contributing to retention and maintenance of the older veteran employee. According to the 2016 Veteran Talent Index, 69% of organizations had established veteran retention programs; a vast increase from 32% in 2014. This is a clear indication of the value of such a program and its positive impact on retaining and maintaining the veteran employee.

Veteran Friendly HR Policies and Procedures

The overarching strategy that should be implemented by organization to support the veteran employee, while balancing the workforce, is ensuring that there are relevant veteran friendly HR policies and procedures in place at the organizational level that would assist in promoting a culture that support veteran employees. They should also consider organizational policies regarding a flexible workplace. Because there are veteran employees within the organization as post-retirement employees, it is important that such workers have the option to work flexible hours, if possible, to accommodate their individual needs. Flexible working hours should not only be considered a workplace practice but should also be supported by organizational policies. Some possible policies and procedures could reflect the inhibition of rigid

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design and structure of full-time jobs (Werner & DeSimone, 2012), which could give the illusion of only addressing the needs of the younger civilian employees.

Veteran Friendly Inclusion Initiatives and Career Development Practices

Many business organizations throughout the United States that are striving to be classified or classify themselves as military friendly organizations (Kirchner& Minnis, 2018). However, "military friendly standards regarding policies, practices, or characteristics do not currently exist for business organizations supportive of military veterans " Kirchner & Minnis, 2018, p. 2). On this premise, it is suggested that organizations that perceive themselves as military friendly organizations consider incorporating these four military/veteran friendly initiatives and practices. The incorporation of such initiatives should assist with the inclusion of veterans at an organizational level.

1. **Promoting an All-Inclusive Work Environment:** Often within an organizational context, the term promoting an all-inclusive work environment often has a focus on minority or disadvantaged groups (women, employees with disabilities, and some ethnic groups). However, as it relates to promoting an veteran-friendly organization, emphasis should also be placed on strategies and best practices that ensure that veteran employees feel valued and appreciated; are actively involved within the organization; and feel a sense of belonging and value; are involved in decision making processes; and have an overall level of support and mutual respect from employees.
2. **A Multiplicity of Training and Development Initiatives:** It is paramount that there be a myriad of training and development initiatives, with emphasis on diversity and inclusion of veterans. It is equally important that those training initiatives are offered on a consistent basis and include a variation of delivery methods and instructional techniques ensuring to address the specific needs of veteran employees. In alignment with a veteran friendly organization, examples of possible training initiatives can include but are not limited to: diversity and inclusion training, attitude adjustments, person/environment fit (with the view of accommodating employees veteran employees according to federal law), job design as applicable, adjustment practices to address the military employee, promoting employee engagement and satisfaction strategies, and much more (Liggans et al. 2018).
3. **Stigma Adjustments:** Regarding veteran employees there are a myriad of stigmas associated with being a veteran employee inclusive of both positive and negative. However, in most instances, the negative stigmas such as veteran employees creating a financial drain on organizations (Greenberg & Rosenheck, (2007), more of a physical at risk compared to younger workers (Stone, Lengnick-Hall, & Muldoon, 2018), or mental/cognitive challenges (Stone & Stone, 2015) must not be tolerated. Instead, the culture within a veteran friendly organization is one that discourages negative attitudes towards veteran employees
4. Recognizing the overall needs associated with the veteran employees and ensuring that there are strategic plans in place that address these needs while still in congruence with overall business practices and policies. Thereby, promoting an overall supportive work environment for veteran workers.

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FUTURE RESEARCH DIRECTION

The infusion of veterans within the civilian workforce is a historical topic in the field of Human Resource Development, Human Resource Management, Organizational Psychology, and Military literature. Veterans have been leaving the military for civilian work for centuries. However, there is still a need for more in-depth empirical research that explores best practices as it relates to veterans transitioning to the civilian work force, inclusion and diversity, and strategies for promoting transfer of training of veterans' knowledge, skills and abilities (KSAs) to the civilian workforce

CONCLUSION

The transitioning of veterans from the military world to the civilian world and by extension, the civilian workforce is a major career transition. To facilitate this challenge, this chapter focused on strategies grounded in diversity management (Byrd & Hughes, 2018) as a foundational platform for developing strategies for promoting inclusion of veterans. Emphasis was placed on inclusion and diversity with a focal point on successfully recruiting, retaining, and career development of veterans. Although veterans are highly motivated to enroll in higher education with the view of credentialing themselves with qualification recognizable by the civilian employer (Hunter-Johnson, 2018) they are encountered with a vast amount of transitional challenges (Hunter-Johnson, 2018). Once relevant credentials are obtained, emphasis is now on the employer and/or organization seeing value in the veteran employees through recruiting, retaining, and career development of the veterans while taking into consideration the transitional challenges of veterans to the civilian workforce.

The transition of veterans to the civilian workforce is a topic that warrants much research with the vast influx of veterans to the civilian workforce. There are still challenges with veterans not being hired in the civilian workforce due to stigmas, age, misconceptions, and lack of knowledge by some civilian employers. In addition, once veterans are hired, there are still transitional challenges, in particular, acclimation to the civilian workforce that needs to be addressed that hinders the veteran employee job satisfaction and retention rate. Veterans are valuable employees that bring, in most instances, the unique skillset that can be beneficial to the organization.

From an organization perspective, it is paramount to strive to be not only an organization that recruits veterans but also one that promotes diversity and inclusion of veterans. This promotion of diversity and inclusion must be evident in both policies and practices. There should be standards, policies, and practices that support the veterans as the diverse employee while promoting inclusion. The organizational culture should be one that supports not only the recruitment and selection of veterans but also job satisfaction and retention of veterans.

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KEY TERMS AND DEFINITIONS

Career Transition: Moving from one career (job) to another.

Career Transitional Challenges: Any challenges associated with changing careers.

HRD Professional: An individual employed within an organization (public or private) and task with the responsibilities of human resource development.

Inclusion: Is the concept of employees being recognized, as equals by their organization and opportunities exist that allows them to positively contribute, be fully engaged, acceptance despite whatever difference may exist at an individual level.

Veteran: An individual, male or female, who would have served in any branch of the military and voluntarily or involuntarily departed.

Veteran Employee: A veteran employed within the civilian workforce.

Workplace Learning and Intervention: Structured work experience that provides a firsthand opportunity for employees to receive on the job training and development.

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Chapter 93
Who Engineering Includes Impacts How Engineers Work: Diversity Challenges and Design Thinking Solutions

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ABSTRACT

This chapter focuses on the persistent lack of diversity in the engineering profession along intersections of race, gender, and other key demographic categories (e.g., sexual orientation, socioeconomic status). After outlining specific circumstances that have influenced the lack of diversity in engineering, the chapter outlines particular challenges related to this lack of diversity and suggests a design thinking approach to resolving those challenges. Drawing on research from engineering education, design thinking, and workplace practice, the authors provide both familiar and novel strategies for addressing diversity in engineering as well as in other professions.

INTRODUCTION

Although many view engineering as a purely technical domain, it is fundamentally social, as it is always working with and in service of people (Bucciarelli, 1988; Hynes & Swenson, 2013). Every stakeholder connected to a project is a person: the client and organization, the design team, other consultants, impacted members of the public, government regulators, shareholders or other investors, and representa-

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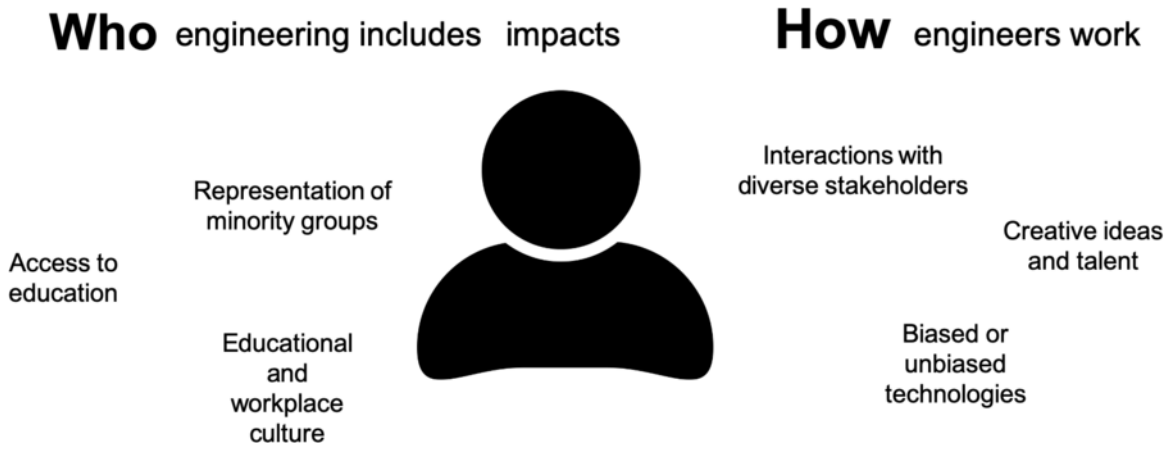
tives of other concerns such as the environment. In an increasingly global and interconnected society, the people with whom and for whom engineers must work have become increasingly more diverse and interconnected. To be an engineer is increasingly to communicate with, empathize with, and design for the problems of a wide variety of individuals spanning diverse demographics and perspectives.

Engineers have largely not increased their diversity parallel to the wider diversity of their stakeholders. Engineering has historically and persistently been a field that is dominated by certain demographic groups (Secules, 2017b). Since its formal organization in the 19th century, engineering has been predominantly white, male, straight, middle-class, and western-centric. This exclusion was formalized through educational pathways and professional societies through the 20th century. In the late 20th century, Civil Rights and Women's Rights movements paved the way for the moral imperative and progress for diversity in professions like engineering. Nevertheless in the 21st century, trends for demographic shifts in engineering have stalled in the United States.

This exclusion of other groups from engineering has meant that engineering solutions are often designed with a bias towards the same exclusive demographics as the engineers themselves. As progress on diversity stalls and the challenges engineers must respond to increase, we see and advocate a set of solutions grounded in design thinking (Brown, 2009) that 1) changes **who** engineers are by designing diversity into the profession, and 2) changes **how** engineers work within their existing and future professional settings (Figure 1).

Figure 1. Changing who engineering includes will impact how engineers work



Authors' Perspectives

The authors of this chapter come from an engineering education research perspective. Each of us have experience with educational and professional engineering contexts, and our perspective is informed by the knowledge that these are interconnected systems. In our current roles as engineering educators and researchers, we are cognizant of the ways that education is creating or reinventing the engineering profession of tomorrow, and the ways that our educational system can be bound up in the current and eventual realities of the engineering profession. By focusing our attention on the lack of diversity and

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opportunities for change in the engineering profession, we hope to encourage further collaboration and cross-pollination of ideas about diversity challenges from educational contexts to industry work settings and vice versa.

THE ENGINEERING PROFESSION LACKS DIVERSITY

History of the Engineering Profession as Exclusive

When discussing diversity in engineering, historical context helps clarify the particular aspects of exclusion at play that may not be present in other professions (Secules, 2017b). Although the field of inventing and using math and science to solve problems existed informally for several hundred years, the engineering profession was largely formalized in the 19th century (Oldenziel, 1999). Prior to the 19th century, the inventive field (represented in western society by terms like "the useful arts") was largely inclusive. Although women were socially constrained to the domestic sphere, their inventions were recognized as similar to men's in the industrial sphere. Likewise, labor classes constructing a building were seen as part of the engineering work.

The formal organization of the engineering discipline in the 19th century created a professional class for engineers that was exclusive to middle-class white men (Oldenziel, 1999; Secules, 2019). To become an engineer required higher education training that was exclusive to this group. Publicly-funded Historically Black Colleges and Universities were excluded from engineering and science degrees through much of the 20th century and only won access due to legal challenges, some of which still continue today (Fletcher et al., 2019; Slaton, 2010b). In white universities where engineering was offered, a common gender divide separated men as engineers and women as home economics majors (Bix, 2002).[1] Although the sudden need for technological advancement in World War II opened employment possibilities for women and racial minorities, these employment options were temporary and limited as the educational system and professional societies prevented full access to the profession (Bix, 2004; Shetterly, 2016; Slaton, 2010a). Subject to persistent structural exclusion, a stereotype of a straight, White, male middle-class professional came to be synonymous with engineer, creating a system of cultural embodied exclusion (Faulkner, 2007a; Secules, 2019). In the late 20th century, Civil Rights and Women's Rights movements paved the way for the moral imperative and progress for diversity in professions like engineering and created diversity initiatives for workplaces and education. In the next section we take stock of the current state of engineering diversification in the 21st century.

Current State of Engineering Diversification

The current state of diversity in engineering is best reflected by noting diversity at stages of academic and career progression (Figure 2). At the pre-college level (i.e., K-12 schooling and informal learning), racially underrepresented minority (URM) students are just as likely as their majority counterparts to be interested in pursuing Science, Technology, Engineering or Mathematics (STEM) education and careers. However, they are less likely to actually apply, enroll, and complete STEM degrees than their White peers (Gasman & Nguyen, 2016). From a gender standpoint, prior to college enrollment, research shows that female students perform equal to or better than male students in math and science classes, yet in most STEM fields their participation is much lower than their male identifying counterparts (O'Dea

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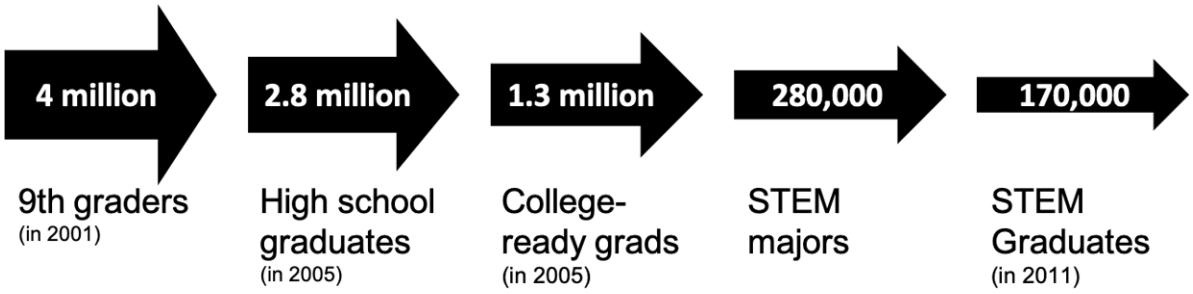
et al., 2018). According to the National Center for Educational Statistics (NCES), women comprised only 36% of all STEM degrees awarded in 2017 and only 22% for engineering (U.S. Department of Education, 2017).

Figure 2. The leaky pipeline in engineering and how African American students are impacted
(adapted from President's Council of Advisors on Science and Technology, 2012; Reid, 2014)



Finally, the engineering profession in the United States is overwhelmingly White non-Hispanic (70%) or Asian (16%) and compromised of men (85%) (National Academy of Engineering, 2018). All other racial / ethnic groups and women are underrepresented in engineering relative to their national demographics. For example, women make up 51% of the US population (United States Census Bureau, 2019) but only 15% of the engineering workforce (National Academy of Engineering, 2018). African Americans make up 13% of the US population (United States Census Bureau, 2019) but only 4% of the engineering workforce (National Academy of Engineering, 2018). Thus although some progress is being made in pre-college and higher education spaces, the engineering profession continues to be even less diverse than the stages of educational attainment that feed into it. Table 1 below further highlights the lack of parity across varying racial / ethnic groups and gender when considering all engineering and science occupations.

Table 1. Workers in science and engineering occupations across gender and racial/ethnic groups

S&E Occupations	Race/Gender Population	U.S. Population
49%	White men	31%
18%	White women	31%
14%	Asian men	3%
7%	Asian women	3%
3%	Black men	6%
2%	Black women	7%
4%	Hispanic men	9%
2%	Hispanic women	8%
2%	Other men and women	3%

(adapted from National Center for Science and Engineering Statistics, 2017)

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While the underrepresentation of other minority groups is harder to assess, several scholars have identified issues with representation and inclusion of LGBTQ engineers (Cech & Pham, 2017; Cech & Waidzunas, 2011), low socioeconomic status and first generation college attendees (Smith & Lucena, 2016), disabled students (Groen et al., 2018), and other groups. Further, people at the intersections of multiple systems of inequality / oppression, for example Latina women from low socioeconomic backgrounds, face even greater challenges and are even harder for researchers to assess (Camacho & Lord, 2011; Mitchell et al., 2014; Secules, Sochacka, et al., 2018). In general, the engineering profession has remained stagnant when it comes to diversifying the field for individuals from varying backgrounds.

How Circumstances Prior to the Profession Create the Lack of Diversity

Pre-College Access to Engineering Education for Diverse Populations

While the reasons for the lack of diversity in engineering are many, there are a few well-documented areas we continue to witness related to diverse populations in engineering at the higher education level and in industry. They include (1) inadequate academic preparation for engineering courses prior to entering college, (2) a lack of access to high quality activities and programming to increase interest in pre-college engineering education and (3) a lack of access to mentors and role models within engineering who they can see themselves in.

When considering academic preparation for college-level prerequisite courses for engineering and upper-level engineering courses, studies have shown that heavily URM-populated secondary institutions and high schools in low-socioeconomic status neighborhoods often do not have adequate facilities, labs or qualified teachers for courses students need to enter engineering in college (Change the Equation, 2015; James & Singer, 2017; Smith-Evans et al., 2014). Additionally, research has found that URMs, especially girls of color, are often steered away from math and science classes across all schools and encouraged to take classes that promote and focus more on communication and dialogue, which leads to the underrepresentation of URMs in Advanced Placement (AP) STEM courses and those same students scoring lower on ACT and SAT exams (Smith-Evans et al., 2014). In many of the same neighborhoods and schools, students are less likely to have programs or course electives, in school and out-of-school, which allow them to learn more about engineering education including more known national programs such as FIRST Robotics and Project Lead the Way (PLTW).

Research has shown that a lack of mentors and role models within pre-college educational settings, both formal and informal, have played a role in the stagnant and, in some cases, declining number of URMs pursuing engineering, especially women within that population (Fletcher et al., 2017; James & Singer, 2017; Mondisa, 2015). Mentors and role models play a major role in whether or not underrepresented students believe that they can succeed in STEM professions.

Diversity, Equity and Inclusion and Engineering Education in Higher Education

The previous section focusing on challenges within the pre-college space highlights the eventual underrepresentation we see at the higher education level. According to the National Center for Educational Statistics, as of 2017, women only made up 25% of engineering bachelor's degrees awarded, although they made up 57% of all bachelor's degrees awarded that year (U.S. Department of Education, 2017). Although this number clearly reflects parity issues within the field, it should be noted that that figure is

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up from 20% in 2015. Additionally, there have been incremental improvements in the number of women within the varying ethnic groups over the years. For example, the percentage of White women obtaining engineering degrees among all White students increased from 18% in 2012 to 21% in 2017. For African American women, their share of their ethnic group increased from 24% to 27%. Similar results were found for Hispanic/Latinx women with their share increasing from 21% to 24% between the same timeframe (U.S. Department of Education, 2017).

Beyond representation, there are also interconnected issues of inclusion in higher education. Students in visibly minoritized populations in engineering, such as women and Black and Latinx students, are often subject to spotlighting by faculty and peers (McLoughlin, 2005) and a feeling of hypervisibility (Blosser, 2019), due to their lack of critical numbers in engineering classes. This experience of hypervisibility can create a sense that each individual is representing their entire population group. The result can be circumstances that introduce and reinforce stereotype threat, which has been shown to decrease students' academic performance (Bell et al., 2003). In addition, majority peers and instructors often form classroom culture and practices around majority cultural norms, and construct narratives about individuals who do not fit into those norms as an individual deficit (Secules, Gupta, et al., 2018). In sum, the many individual mental and interpersonal strains created for minoritized students result in an inequitable educational experience.

The experience for less visible minorities, such as LGBTQ students and first generation college students, in engineering higher education is also difficult. LGBTQ students experience marginalization and feel pressure to pass and hide their LGBTQ identities to fit in with the mainstream (Cech & Waidzunas, 2011). Students who are first generation college students must draw on alternative forms of cultural capital in a system that is less familiar to them (Smith & Lucena, 2016). In addition, as experiences that are relatively hidden from caring instructors and without institutional support structures, these students are often left with less support than other minoritized student groups (Secules, Sochacka, et al., 2018). Similarly, students at the intersection of multiple systems of oppression may experience additional challenges not only with multiple forms of marginalization, but also with university support structures, for example being one of a few Black women or lesbians in a women in engineering support group (Secules, Sochacka, et al., 2018).

Impact of Pre-College and Higher Education Issues on Diversity in Engineering Industry

Ultimately, the net effect of exclusion and inequity in pre-college and higher educational settings compounds in engineering industry. As noted, there is an even greater lack of diversity in the engineering profession, as some diverse individuals who completed engineering degrees will choose to leave the field after completing their degrees. Hiring practices can exacerbate these circumstances, with workplaces choosing individuals who "fit" more easily with a company culture (Rivera, 2012). Given the racial, gender, class, and cultural makeup of engineering workplaces, these forces function as discrimination, whether intentional or unintentional. This process of recreating demographic associations with engineering through cultural processes accords with a theory of cultural reproduction (Secules, 2019; Seron et al., 2015), wherein the culture created by a dominant demographic group creates an unwelcoming environment for non-dominant groups and thereby recreates their own demographic dominance. The process of creating masculine demographic associations has been widely confirmed across several examples of

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masculine-associated professions and hobbies (Bird, 1996; in engineering, Faulkner, 2007b), and the same likely holds true for other demographic groups.

As a specific example, women of color in engineering experience challenges based on lack of role models (Ross, 2016), thus there is an additional compounding effect from the lack of inclusion of women of color, a specific enacted example where lack of inclusion recreates demographic exclusion. In addition, women of color in engineering note gender and racial bias, stereotypes experienced in the workplace, unfair performance evaluations, and lack of honest feedback (Fletcher et al., 2017; Ross, 2016; Yates & Rincon, 2018). One in four women leave the engineering profession within the first five years, a rate much higher than their male counterparts (Yates & Rincon, 2018).

How Lack of Diversity Causes Problems within Engineering Professional Work

When examining the impact of the lack of diversity in the engineering workplace, it is critical to consider the impact on the actual work of engineers. For instance, in the design of many systems, engineers can fall victim to the practice of assuming that a product design is fine "as long as it works for them and their experience" (Coso & Pritchett, 2015, p. 6). Studies of engineering organizations have illustrated how some engineers assume that they understand the experiences of everyone based only on their own experience (Coso & Pritchett, 2015). The tendency to discount or to not have awareness of the experiences of broader and more diverse user groups is compounded by the lack of diversity within engineering organizations. Engineering teams and organizations, especially those without diverse compositions, become hubs for user perspectives that are limited in their understandings of the broader population.

Homogenous engineering teams can also foster negative attitudes towards individuals from other disciplines who bring different perspectives and ideas (Coso & Pritchett, 2015). These attitudes can impact the decisions made within a product design process and ultimately, the effectiveness of the final product. Within the aerospace industry, for example, an engineering team may not only consist of engineers, but also individuals trained in human factors or psychology. Their role on the team is to identify and integrate the considerations of a diverse set of stakeholders within an aerospace vehicle design. However, when their perceptions are not valued on a team (Coso & Pritchett, 2015; Feigh & Chua, 2011) or their perceptions are not considered due to lack of representation on that team, there can be problems even later in the design process or with the final product. In the case of one aerospace organization, a human factors specialist described:

[human factors]-related research and groups are the first to have funding cut when it comes to the budget...yet...there may be problems two years later in manufacturing that could have been prevented if the [human factors] specialists had been involved at the beginning of the process. (Coso & Pritchett, 2015).

The lack of consideration of diverse stakeholders, whether caused by an n=1 approach to design or the lack of inclusion of human factors and related professionals, can have substantial impacts on the final design of a system and/or product. In some cases, these actions can have unforeseen consequences on individual users. For instance, military aircraft and other vehicles have been traditionally built with the 90-95th percentile male measurements and body characteristics in mind (Weber, 1997). Thus, both women and small-statured men can be placed at a significant disadvantage when piloting those systems (Weber, 1997). The outcomes of this bias in engineering technologies are a result of the lack of diversity in engineering coupled with a lack of strategies to think and design across different populations. In recent

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years, noted examples of bias have been found in facial recognition software, where products work best for white faces (Garvie & Frankle, 2016). In 2018 a video of a Black person attempting to use a soap dispenser went viral—the soap dispenser worked only for lighter and more reflective materials. Finally, for a period of time, car crash test dummies were designed for an average adult male-sized person, and thus the safety conditions of cars were not tested or designed for the average sizes of women or children (Criado-Perez, 2019). By excluding particular groups in the engineering decision-making process, engineers are creating exclusionary products and systems that have broad societal consequences that are serious and urgent.

SOLUTIONS AND RECOMMENDATIONS

Two Cases for Diversity in Engineering

There are typically two parallel arguments for working to diversify the engineering profession: 1) a pragmatic business case and 2) a social justice case (Tomlinson & Schwabenland, 2010). We name both here because it is important to understand the guiding motivations of yourself and of others who take up this cause.

In the pragmatic / business case, there is a profit-oriented argument for diversifying the engineering profession (Kochan et al., 2003). The typical elements of the pragmatic case are: meritocracy (if we anticipate that merit is evenly distributed across populations, then the best and brightest engineers will come from a cross-section of demographics), creativity (people from different backgrounds think differently and the widest variety of ideas will come from the widest group), public relations (valuing diversity is a positive public relations move in today's society), and ultimately profit (diversity will lead to better work and therefore profit). Many workplaces are oriented primarily by these pragmatic elements of diversity and inclusion (Ahmed, 2012; Tomlinson & Schwabenland, 2010). By understanding that context when beginning to frame and enact solutions, individuals can consider how a business-oriented audience is likely to receive their messaging and what reforms will be considered a priority.

In the social justice case, there is a moral imperative for diversifying the engineering profession (Secules, 2017b; Slaton, 2015). The typical elements of the social justice case are: history (correcting a professional legacy of exclusion), privilege (redistributing the social power of the engineering profession), democracy (creating greater access to the tools of engineering), and ultimately justice (seeking a more equal world). This chapter opened with a historically-situated social justice framing for diversity in engineering, and this is often what orients academics, activists, and critical scholars who work towards diversification. For individuals coming from this perspective, there is typically a moral imperative and an urgency to correcting historical and present-day inequality that can be at odds with proponents of the business case.

Both the pragmatic case and the social justice case for diversity have communicative value-- commonly one or the other framing is more accessible to a particular audience. Yet both of these cases have some drawbacks. The pragmatic case could be considered optimistic and unrealistic about many lived realities of diversity in workplaces. Diversity may have a net social good, but it does not always linearly increase merit, productivity, good will, and a financial bottom line (Leonard et al., 2004). Sometimes increasing diversity causes workplace tensions, tough decisions, and accusations of special treatment. The pragmatic business case can lead to either lip service or naive faith regarding diversity that does

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not take into account reality (Ahmed, 2012; Thomas, 2018). The social justice case takes on resistant constituents and calls out problems, but may be heard as a critique only and may not take into account the parallel goals and interests of a non-activist, for-profit business. Social justice cases for diversity, while prominent in academia and activism, can be sidelined in professional settings (Ahmed, 2012; Thomas, 2018).

This chapter proposes a third approach to diversity in engineering, one that draws on skills incumbent within engineering work. We propose that engineering is specifically connected to diversity through design. As engineering design helps create the built environment and technology, it has major impact on power, privilege, and justice. As engineering is pursued by individuals, their design is impacted by their individuality and thus their diversity. Engineers, and other professionals, can take a solution-oriented *design thinking* approach to diversifying engineering.

Design Thinking Approach to Diversity

Design Thinking has become a popularized term for describing the activities that an individual may employ to understand a problem and potential user population, generate ideas, prototype and test, and engage in an overall iterative process (Brown, 2009; Brown & Katz, 2011). Moving beyond the term, design and design approaches to problems have been long considered a central activity of engineering (Dym et al., 2005). Engineers are introduced to design activities as early as their K-12 education (Crismond & Adams, 2012) and in the first year of many undergraduate engineering programs (Froyd et al., 2012).

Figure 3 presents some of the key components of the design thinking process, and Figure 4 presents an application of design thinking to aspects of professional diversification. When engaging in Design Thinking, engineers question a problem to understand what a client or customer really want and whether the problem is even the root problem. Before considering a single solution, engineers seek to be divergent in their thinking, generating many possible (and even some seemingly impossible) solutions. Much of these initial design activities are performed with large amounts of uncertainty, such as with incomplete information or ambiguous objectives from the client. The challenges we face to support the diversification of the engineering profession and to enable solutions that consider more diverse user populations are large, complex, and filled with uncertainty. This uncertainty and complexity are at the heart of Design Thinking and are aligned with the skills engineers already use.

Another critical piece of this design approach is prototyping and experimentation. Prototyping is, in itself, a learning process. Engineers develop early state prototypes with the intention of them failing quickly, in other words, enabling them to explore many ideas in a short period of time (even if they fail), rather than spending a significant amount of time on a single idea, especially early on in the process. Prototyping new solutions for recruitment and/or workforce development, for example, would allow HR professionals and practicing engineers to learn more about the problem and the individual groups they are looking to hire. Overall, these design skills (i.e., problem definition, empathy, comfort with uncertainty, collaboration, idea generation, prototyping) have become important components of the engineering profession and engineering education, and many of these skills could be leveraged to improve diversity within engineering practice. The subsequent sections present different approaches for leveraging design skills to improve diversity during pre-college/higher education in engineering, within engineering workplaces, and within engineering professional work.

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Figure 3. Components of design thinking

Solution #1: Increased Collaborations between Educational Institutions and Industry

Pre-college, higher education institutions and industry should make a concerted effort to better understand the roadblocks and barriers linked to underrepresented students and their quests for access to engineering education. These challenges that essentially creep into the higher education system, should also be kept in mind as the impact then affects the progress industry hopes to have from a diversity and inclusion standpoint within their organizations. When considering the desire to increase equitable access to jobs and inclusion for diverse employees in industry positions, improving collaborations between educational institutions, pre-college and college, and industry is of great importance.

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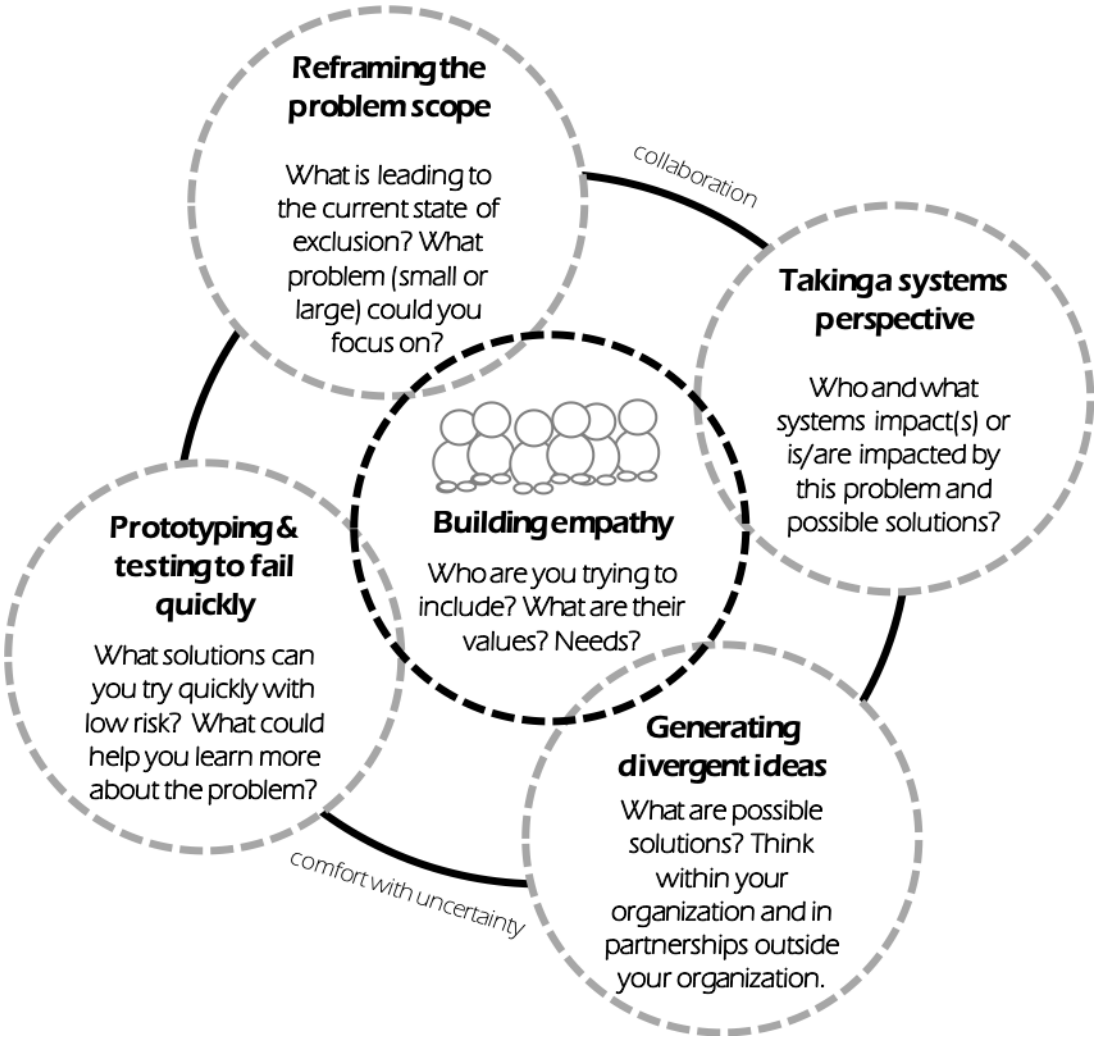
Figure 4. Design thinking focused on diversity, equity, and inclusion



There are several avenues that can help make successful collaborations. First, prioritizing access to high quality engineering education for URMs will provide a level of exposure to the fields that would increase students' chances of being interested in engineering. Industry partners should be involved and engaged so that students can have real-world examples of their careers post higher education. Secondly, collaborators must champion equitable access to and support within engineering education programs for both pre-college and higher education programs. By making entering and remaining in engineering education more equitable, the number of URMs pursuing engineering as an undergraduate student should increase and the number of students who leave undergraduate engineering programs should decrease. Third, training on diversity, equity and inclusion for institutional leadership, faculty and staff at all educational levels should be implemented and fully supported by institutional leadership. This training could be aligned with existing efforts to develop industrial leaders' diversity intelligence, which enables them to value differences in individuals, without seeking to make the same (Hughes, 2016, 2018). Lastly, there should be a concerted effort to spread knowledge on the need and benefits of diverse populations

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in engineering within the K-12 space, higher education and within industry. Companies that are working with educational institutions should increase their efforts to support student success within engineering not only while the students are in school but also as they transition into industry and throughout their careers.

In general, these groups could work more purposefully towards 1) understanding and building empathy for diverse populations and the value they add to organizations, 2) collaborating together to generate ideas about how to take overall diversity, equity and inclusion efforts to higher levels, and, lastly, 3) experimenting and prototyping ideas in all the spaces (i.e., K-12, higher education, industry).

Solution #2: Collectively Reflecting on Diversity and Inclusion

Engineering professionals can turn to their own organizations and reflect on their current diversity. Diversity and inclusion has been discussed as a "wicked problem" (Zoltowski et al., 2017), or as a complex interrelated problem that is well-poised to be better understood by a design thinking framework. Thinking creatively and iteratively about such a seemingly intractable problem can give people a better appreciation of the realities and constraints, new solution areas, and better regrouping after initial failures. Workplaces can also be conceived of as complex systems with many stakeholders. By thinking of each of these stakeholders as holding useful local knowledge about diversity and inclusion, and uncovering and mapping these perspectives in a safe environment, workshop leaders outside of a workplace have helped trigger reflection, action, and coordination around diversity and inclusion.

In a series of interactive workshops with academic and industry professionals, Secules and his collaborators have run an activity that helps people think about the local knowledge of challenges and strategies for improving diversity and inclusion in aspects of the organization (Secules et al., 2019). After discussing organizational mission and thinking about overlapping issues of diversity and inclusion, the workshop organizers provide a framework for thinking about aspects of a professional organization. For instance, when presenting at Carnegie Institute for Science, the categories co-developed with employees were: Policy, Personnel, Fundraising, Communication, Research & Development, and Outreach. All employees were then asked to create Post-it Note responses with categories of diversity and inclusion 1) questions, 2) known challenges, and 3) possible solutions that fit within each of the categories. They then posted them on large pieces of paper throughout the room, read each other's responses, and built on those responses (e.g., asking and answering each other's questions). The approach typically triggers reflection, conversation, and concerted action related to diversity and inclusion that has otherwise not been thought about or has stagnated. A similar approach was taken in a workshop with Penn State University, specifically around staff and faculty inclusion for LGBTQ and disabled students. The approach draws on Design Thinking approaches to problem scoping and ideation with a large group of stakeholders who have localized knowledge of an issue.

Solution #3: Designing for Diversity within Engineering Practices

Even with increased diversity within the profession, engineering will continue to be impacted by the lack of diversity that exists at the micro-level, particularly within engineering teams. It is practically not possible to represent all intersections of human experience on a single team. Thus, organizations and engineers should consider implementing engineering design strategies focused on human-centered and community-oriented design practice to help engineers engage in and elevate the diverse perspectives of

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clients or customers. This solution may be implemented in the form of workforce development or become translated into interview questions to search for engineers with a mindset towards these design practices.

Design for Extremes

Grounded in universal design principles (Mcadams & Kostovich, 2011), many organizations design their products with the "extreme" users in mind (e.g., those who are at the extremes physically, those who hold viewpoints at the extremes). For example, one of the most prominent companies for kitchen tools, OXO, was inspired by the experience of a family member with arthritis who was trying to use a vegetable peeler (Wilson, 2018). By considering individuals who face challenges engaging with certain types of handles alongside those who don't, the design team at OXO created an innovative, intuitive, and comfortable handle for what became the Good Grips line that could be used by all (Wilson, 2018). The principles behind universal design enable the development of more accessible designs without the stigma that can be created around designing for a particular 'extreme' of the population. As a result, engineers could leverage this strategy to consider the experiences of those who are not represented within their engineering teams. First, what perspectives and experiences would someone from this sub-group hold? What physical or other characteristics might impact the ultimate design?

Collaborate Across Disciplines

In the same manner that engineers are trained in design, those individuals with a background in human factors, psychology, and/or cognitive engineering are trained to identify and integrate the considerations of a diverse set of stakeholders within a design. Currently some organizations are embedding these individuals within design teams to help those teams consider project stakeholders early and often (Coso & Pritchett, 2015; Pritchett & Strong, 2016). Alternatively, organizations can create opportunities for these specialists to consult on various projects (Coso & Pritchett, 2015; Pritchett & Strong, 2016). For example, a human factors specialist can be consulted to develop and test prototypes with an array of user abilities, constraints, and values. Therefore, even though the engineering team may not be diverse or have the training to incorporate these user considerations, the team has leveraged the expertise in their company to develop a product that can be used by a diverse population. While there are still challenges with this approach, as described in Section 2.3, HR professionals and engineers can promote this collaborative behavior by increasing the awareness of and appreciation for those with human factors or related specialties among existing employees and new employees.

FUTURE RESEARCH DIRECTIONS

There are several prominent research directions for broadening diversity and inclusion in the engineering profession. As noted, the authors of this chapter are members of the engineering education research community. At each stage of the educational and professionalization process, there are untold stories and unexamined issues in problematic cultures that recreate histories of demographic exclusion in the engineering profession. Taking on qualitative, critical, interpretive, or anthropological lenses to look at these cultural processes can help uncover new ways to shift that persistent pattern (Secules, 2017a).

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In particular, we call for further collaborations with industry that can foster innovative research approaches. Currently, a group of engineering practitioners and engineering education scholars are working to create a scholarly community at this intersection through the development of an engineering practice research agenda (Brunhaver et al., 2018, 2019). While previous research has explored a series of topics at the intersection of engineering practice and the preparation of future engineers (e.g., experiences of those transitioning into the workforce (Brunhaver et al., 2011), the experiences of underrepresented groups in industry (Cech & Pham, 2017; Ross, 2016)), the resulting research agenda highlights a need to focus on diversity, equity, and inclusion in engineering practice.

Specifically, research should support our understanding of the power dynamics that influence who gets to participate in engineering practice, along with a deeper understanding of the impact lack of diversity has on engineering work and the workplace (Brunhaver et al., 2019). When we, as individuals, experience the societal implications of lack of diversity in engineering, the problem has already gone too far. As researchers, we need to identify the features of an engineering team, engineering design process, and an engineering organization that can prevent these situations from occurring in the first place. In addition, many organizations already work with universities and K-12 schools through outreach, scholarship, and internship opportunities. Yet, questions remain regarding what of these efforts are working, to what extent are they working, and what aspects of their design are influencing their success. Research is needed to explore existing relationships and partnerships between educational institutions and industry to examine the impacts of these partnerships and develop recommendations for achieving the greatest impact on students' pathways into and within engineering.

We note that one of the reasons more interdisciplinary workforce and education research collaboration has not yet taken place is that there are challenges faced by researchers who take on those projects. For example, access to potential research sites can be a challenge for academic researchers focused on industry settings (Stevens & Vinson, 2014). Industry also has more of an incentive for non-disclosure agreements and a desire for control over what is published about the company (Stevens & Vinson, 2014). Thus, we hope this chapter serves as an opportunity to be clear about the challenges and the opportunities that can come with taking on new cross-cutting research approaches, and an invitation for others to help overcome the challenges together.

CONCLUSION

We engaged with diversity in the engineering profession around two central topics 1) **who** engineers are in their demographic makeup, and 2) **how** that impacts engineering professional work. People engage with each of these topics from different perspectives. There are clear arguments for caring about who has access to engineering from a social justice perspective, righting historical inequities. There are also pragmatic reasons for caring about diversity in engineering, since a lack of diversity is directly tied to problems in engineering work, including biased technology and loss of talent. While we each bring our own motivations, we draw strength in fostering collective and interdisciplinary solutions that bring about multiple goals. We propose that the set of solution strategies and the framing of diversity challenges as design problems offer a new language for communication across disparate motivations and a pragmatic yet realistic framework for reasoning about these complex social issues.

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KEY TERMS AND DEFINITIONS

Bias in Engineering Technologies: Engineering technologies that create inequity between different groups in society, either intentionally or unintentionally.

Business Case for Diversity: A case for the importance of diversity that is grounded in profit-oriented rationales based on creativity, meritocracy, and diversity of ideas.

Design Thinking: A set of activities that an individual may employ to understand a problem and potential user population, generate ideas, prototype and test, and engage in an overall iterative process.

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Human Factors: Components of engineering design that focus on the aspects related to human users and operators.

Idea Generation: A component of design thinking focused on generating possible solutions to a given engineering design problem.

Intersections of Oppression: The co-existence of systems of power and oppression, such as gender, race/ethnicity, sexual orientation, ability/disability, and socioeconomic status.

Problem Definition: A component of design thinking focused on formulating the scope and boundaries of an engineering design problem.

Prototyping: Implementing and testing out ideas in an iterative way.

Social Justice Case for Diversity: A case for the importance of diversity that is grounded in the historical inequities and exclusions associated with a given profession or national environment.

Underrepresented Racial Minority (URM): A racial/ethnic group that is under-represented in the engineering profession relative to their representation in the US national population, e.g., African American and Latinxs.

ENDNOTE

[1] The rare female engineer was sometimes called an "Engineeress" (Bix, 2004).

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Chapter 94
Reducing Lookism in the Workplace

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ABSTRACT

Lookism issues have been studied in the fields of economics, social science, physiology, and business. Studies have shown that physical appearance affects employers' judgment about the quality of an employee. The purpose of this chapter is to explore the effects of lookism on career development in organizations. In addition, this chapter discusses the strategies for reducing lookism in the workplace from a human resource development perspective and provides four strategies for reducing lookism. First, legislation should include and address issues of physical attractiveness. Second, diversity education and training should be provided to students, employees, and employers. Third, diversity management should be practiced in the workplace. Fourth, appropriate employment processes should be adopted. Future research should study lookism over a wider range of occupations across different cultures. In addition, future studies should develop theories and conceptual frameworks to support and explain current issues of lookism in the workplace.

INTRODUCTION

Yes, we should not judge a person only according to appearance. But you know, if companies prefer pretty, tall and thin girls, what can I do? I have to put my "studio portrait" on my resume. Sometimes some companies even ask me to write my weight and height on my resume. This is reality!... There are some pretty girls in my class and every year they can easily find part-time jobs because of their appearance. I used to think I could never be one of them. But last year, when I came back after summer vacation, I

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found that [the] faces of two of my classmates had changed. Their eyes had become bigger, faces thinner, and noses smaller and higher. One of them has already signed a preliminary contract with a media company, at which I also got an interview. I didn't get the job, but she did. My academic record is much better than hers, and I'm sure I performed better than her in the interview. It's just so unfair that they chose her instead of me! The only explanation is that she is taller than me and also prettier than me with the help of the scalpel...I don't think that a pretty face is everything. But it definitely brings advantages. It's a key to opening the door. (Wen, 2009, p. 98)

Lookism refers to physical appearance discrimination or physical attractiveness bias (Chae, 2019; DeCastro-Ambrosetti & Cho, 2011), by which preferential treatment is given to those who are deemed attractive in a way that discriminates against those who have less physical charm (Sims, 2015). The value has been attached to certain characteristics such as "height, weight, body size, facial features (including eye color and nose size), hair color/texture, skin color, one's attired and hairstyles" (Sims, 2019, p. 1). Beautism has already been acknowledged by social and evolutionary psychologists (Gehrsitz, 2014), and they consider physical appearance to be an important determiner of whether other people like them (Buss, 1989). Nevertheless, the effect of physical appearance is not negligible considering the impact on employment decisions (Gehrsitz, 2014). It is obvious that lookism exists among job hunting because managers prefer applicants whose physical appearance is more socially attractive. Hamermesh (2013) states that lookism exists in the workplace and attractiveness is deemed a social productive quality. Women have paid more attention to body image, styles in clothes, haircuts, and cosmetics as economic growth is increasing (Wen, 2009). Moreover, attractive appearance is viewed as a form of capital that can provide applicants an advantage on the job market.

According to a report from *the International Society of Aesthetic Plastic Surgery* (2017), the total surgical procedures increased by 4% in 2017 compared to 2016. The statistics indicate that there is an excessive concern with physical appearance, and there is a significant tendency for people to undergo surgical procedures to enhance their appearance. It also demonstrates that beauty matters in people's daily lives. It is universally acknowledged that men and women benefit from their attractiveness when applying for most jobs, considering the employment suitability (Johnson, Podratz, Dipboye, & Gibbons, 2010). Individuals with a perceived attractive appearance are more likely to be interviewed and hired, and they are often offered a higher salary than those who are less perceived attractive (Chelcea & Ivan, 2016; Niu, 2018). In addition, perceived attractive employees are more likely to be promoted to leadership positions (Ling, Luo, & She, 2019).

The purpose of this chapter is to explore the effects of lookism on career development in organizations. In addition, this chapter discusses strategies for reducing lookism in the workplace from a human resource development (HRD) perspective. This chapter would increase the awareness of lookism and attract scholars' attentions to raise more effective strategies.

BACKGROUND

Many studies have focused on lookism issues since the 1950s, and it became more common during the 1970s-1980s. The implicit personality theory has been studied since the 1950s by many researchers (Ashmore, 1981; Bruner & Tagiuri, 1954). Blau and Duncan (1967) have analyzed the American occupational structure. The social identity theory was defined by Tajfel (1972). In the social psychology

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field, Adams (1977, 1982) studied physical attractiveness. The "what is beautiful is good" stereotype (Dion, et al., 1972) and the "beauty is beastly" (Heilman & Saruwatari, 1979) were established during the 1970s. Many studies have been focused on the effect of physical attractiveness on employment decisions (Chiu & Babcock, 2002; Chung & Leung, 1988). In the past decade, there were only a few studies on lookism, and gaps in the literature remain for future researchers to study.

What is Beautiful is Good

"What is beautiful is good" (Dion, Berscheid, & Walster, 1972, p. 285), also known as the physical attractiveness stereotype, is one of the most widely cited theories on lookism. The physical attractiveness stereotype can be explained by the implicit personality theory, which describes the assumed relationships among an individual's traits and characteristics (Bruner & Tagiuri, 1954). When people observe a few positive attributes in others they tend to assume the co-existence of other positive attributes. For example, Abel, Croysdale, and Stiles (2009) suggested that physical attractiveness, as a physical characteristic, could be linked to other dimensions of personality, such as interpersonal relationships, communication skills, career development, and intelligence. Therefore, people considered physically attractive are usually attributed with characteristics such as higher income, better social skills, friendliness, happiness, and health.

"What is beautiful is good" have been supported by previous studies. For example, Quereshi and Kay (1986) indicated that perceived physical attractive individuals were considered to have better social competence than plain-looking ones, so they were more likely to be hired for a job that involved a significant amount of social interaction. Furthermore, O'Connor and Gladstone (2014) found physically attractiveness was positively associated with the ability to establish connections with others, which also influenced others to provide more network opportunities to perceived attractive individuals.

Beauty is Beastly

Most research has provided evidence for the "what is beautiful is good" stereotype (e.g. Niu, Hirudayaraj, Sims, & Kawashima, 2018; O'Connor & Gladstone, 2014; Quereshi & Kay, 1986). However, a few studies have found a phenomenon that opposes this stereotype, which is the "beauty is beastly" phenomenon (Heilman & Saruwatari, 1979; Heilman & Stopeck, 1985). It indicates that a perceived attractive appearance can be a disadvantage for women when applying for traditionally masculine jobs. However, Johnson, et al. (2010) suggested that the "beauty is beastly" effect was limited to the very narrow masculine occupation categories in which physical attractiveness is not important, such as tow truck driver, construction supervision, prison guard, hardware salesperson, etc.

Theory of Circumscription, Compromise, and Self-Creation

Gottfredson's (2002) theory of circumscription, compromise, and self-creation can also be used to understand how lookism impacts career choices. Gottfredson (2002) argued that "forming occupational aspirations is a process of comparing one's self-image with images of occupations and judging [the] degree of match between the two" (p. 93). During this process, it is important to understand "properties of self, occupations and the place of both in the social world" (Gottfredson, 2002, p. 93). In order to decide whether to enter a particular occupation or not, individuals have to consider the following fac-

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tors: "availability of the job within the surrounding geographic area, perceptions of discrimination or favoritism, ease of obtaining training for the job, or lack of knowledge of how to enter the job" (Gottfredson, 1981, p. 548). When employers and society send out the messages that physical attractiveness is important to some occupations, individuals who are not considered attractive will not choose to enter those occupations.

Expectancy Theory

The expectancy theory (Vroom, 1964) assumes that individuals act in ways that maximize pleasure and minimize pain. Vroom (1964) argues that motivation can be influenced by three factors: valence, expectancy, and instrumentality. The expectation and level of confidence about physical attractiveness may view as the expectancy beliefs in Vroom's model (Hurley-Hanson & Giannantonio, 2007). Therefore, when an employer and the society of appearance-oriented culture send information about the importance of physical appearance, individuals evaluate their own physical appearance and then make decisions on career choices.

MAIN FOCUS OF THE CHAPTER

Issues, Controversies, Problems

Effect of Lookism on Recruitment and Selection Process

Lookism exists in many aspects of the workplace. For example, lookism occurs in the recruitment process and influences job applicants' opportunities. Niu, et al. (2018) conducted a content analysis of job advertisements in China and found that over 46% investigated nursing job advertisement contained physical appearance specifications, such as age, tall, attractiveness, body shape, and skin complexion. Therefore, applicants with these preferred features have more opportunities for interviews and employment. Similarly, Simorangkir (2013) points out that lookism was found through a great number of job ads for public relations positions in Indonesia, and perceived attractive appearance has already become one of the criteria for applicants. Employers preferred applicants who are considered good-looking while penalizing those who are considered less attractive (Warhurst, Van den Broek, Hall, & Nickson, 2009).

In the labor market, workers with preferred appearances are believed to achieve greater occupational success (Gehrsitz, 2014; Robins, Homer, & French, 2011), so many employers adopt appearance-based hiring as a marketing technique in some Asian countries, where they do not have legislation regarding lookism (Cavico, Muffler, & Mujtaba, 2012). For example, Maurer-Fazio and Lei (2015) conducted a resume audit and found that applicants with perceived attractive photos received higher callback rates across gender, occupation, and location. In addition, Niu (2018) conducted a similar study and found that both male and female raters were more likely to interview and hire the applicants with a perceived attractive photo than the ones with perceived unattractive photos or without photos in the hypothetical situation.

The increased use of social networking sites (SNS) as a tool for recruiting and selecting potential employees has changed the hiring practices (Elias, Honda, Kimmel, & Chun, 2016; Villeda & McCamey, 2019). However, it also brings legal issues and implicit bias. For example, Baert (2018) conducted a

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study to investigate whether the publicly available information on Facebook about job applicants affects the hiring decisions of employers. The results showed that candidates with what was perceived to be more attractive Facebook pictures obtained more hiring opportunities compared to the ones with the less perceived attractive pictures.

Effects of Lookism on Wages, Promotions, and Termination Decisions

Although the majority of research regarding lookism focuses on the process of recruitment and selection, some studies have investigated other employment effects of lookism, including wages, promotion, and termination decisions. For example, Borland and Leigh (2014) indicate that men with a perceived attractive appearance have a 15% premium in their earnings and the ones with perceived unattractive appearances suffer a penalty of 25%; however, the effect is not significant for women. In addition, Niu (2018) also found that job applicants with perceived attractive photos were more likely to be offered higher salaries than the ones with perceived unattractive photos or without photos. According to Ling, et al. (2019), perceived physical attractive leaders have more chances of promotion. Commisso and Finkelstein (2012) conducted an experimental study and showed that perceived unattractive employees were more likely to be terminated than perceived attractive ones.

Effects of Lookism on Marketing

Having an attractive appearance is viewed as an integral part of the product and service itself (Gehrsitz, 2014), so the employee's appearance affects a customer's attitude toward a company. In addition, Li, Zhang, and Laroche (2019) conducted both experimental and field studies and found a service representative's perceived physical attractiveness affects consumer response, including customer satisfaction, service quality perception, and likability of the service representative. Fang, Zhang, and Li (2020) also indicated that the physical attractiveness of employees affects tourists' customer engagement. Therefore, the recruitment of good-looking employees is viewed as an effective business practice in the service industry (Li, et al., 2019). However, attractive employees are not always beneficial to a service population, because customers who consider themselves as unattractive may prefer to interact with perceived unattractive service representatives (Li, et al., 2019). Therefore, evaluating applicants or employees based on physical attractiveness is not an effective evaluation method. The quality of the workforce pool may be hurt by lookism.

Solutions and Recommendations

Policies and Legislation

In the United States, the Bona Fide Occupational Qualification (BFOQ) allows employers to make employment decisions based on prohibited criteria if it is necessary for the particular occupations. If physical appearance is a BFOQ, employers are allowed to "establish appearance-based BFOQs by showing the trait or characteristic is necessary to the operation of their business, and they are justified in considering particular physical characteristics in the hiring process" (Vo, 2002, p. 358). However, it may be abused in positions that do not require certain physical characteristics. Therefore, it is important to consider adding physical attractiveness as a protected class through legislation.

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Title VII of the Civil Rights Act of 1964 prohibits employment discrimination based on race, color, sex, religion, and national origin. Title VII does not explicitly prohibit appearance-based discrimination, and people must make appearance-based discrimination claims fit the protected categories of Title VII to court (Zakrzewski, 2004; Friedricks, 2015). However, it is difficult to prove that physical appearance discrimination can be linked to one of the protected classes in Title VII (Hammer, 2017). For example, there is a strong relationship between physical appearance discrimination and one's gender as a female, so some cases of physical attractiveness were linked to gender discrimination (Friedricks, 2015). However, it is difficult to prove that discrimination was clearly motivated by sex discrimination when men experience lookism or discrimination occurs among individuals with the same gender (Hammer, 2017).

Another suggestion is to extend the Americans with Disabilities Act (ADA) to include physical appearance discrimination (Crow & Payne, 1992). The ADA protects individuals who have a physical or mental impairment or individuals who are perceived as having a physical or mental impairment that limits their major life activities. Currently, common physical attributes are not covered by ADA if they are not caused by a health condition (Toledano, 2013). Crow and Payne (1992) suggested that unattractive appearance is disadvantageous, and it may impair an individual's ability to fulfill major life activities.

The most challenging issue is that it is difficult to define physical appearance discrimination because physical attractiveness is subjective (Corbett, 2011). It is not easy to clarify the qualifications for a claim of physical appearance discrimination (Corbett, 2007). In addition, it is even harder to provide evidence to show a person was evaluated based on their physical attractiveness during the employment process (Corbett, 2011). It is difficult to provide an appreciate solution to address lookism issues from legislation perspectives. Therefore, there is a large space to continue researching what and how to establish and implement legislation for physical appearance discrimination.

Diversity Education and Training

Although the civil rights movement has led to real social change, discrimination still occurs in daily life and in the workplace (King, Dawson, Kravitz, & Gulick, 2012). Diversity training is defined as "a distinct set of programs aimed at facilitating positive inter-group interactions, reducing prejudice and discrimination and enhancing the skills, knowledge and motivation of people to interact with diverse others" (Bezrukova, Jehn, & Spell, 2012, p. 208). Education is an effective way to increase awareness of employment lookism. Therefore, people should be educated that lookism is wrongful and it should be not tolerated. Universities should discuss diversity issues in related classes, such as human resource development, business ethics, and sociology. This effort will contribute to the future workforce. In addition, diversity training should be provided to employers and employees in the workplace, which can improve the acceptance of colleagues with different cultural backgrounds, physical appearance, gender, age, etc.

Previous studies have shown many positive impacts of diversity training. For example, Alhejji, Garavan, Carbery, O'Brien, and McGuire (2016) conducted a systematic review regarding diversity training and concluded that diversity training brings outcomes from three perspectives: learning, business, and social justice. Learning outcomes include enhanced employee knowledge and awareness of diversity issues, enhanced diversity behaviors and skills to handle diversity issues, and changed attitudes toward diversity (Delucio, Ledbetter, & Avellar, 2013; Downing & Kowal, 2011; Gendron et al., 2013; Israel, Harkness, Jain, 2013). Business outcomes include productivity gains, sales increases, enhanced employee performance, enhanced customer satisfaction, and financial performance (Ellis & Sonnenfield, 1994; Ely, 2004; Reynolds, Rahman, & Bradetich, 2014; Stanhope, Solomon, Finley, Pernell-Arnold,

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Bourjolly, & Sands, 2008). Social justice outcomes include improved relationships, enhanced tolerance toward minorities, and improved confidence to work with diverse groups (Armour, Bain, & Rubio, 2004; Burch, 2008; Cunningham, 2012; Williams, 2005).

However, previous scholars also found negative outcomes of diversity training. For example, negative outcomes include negative interpersonal attitudes, higher levels of interpersonal conflict, and a lack of managerial skills to create and manage diversity (Harrison & Klein, 2007; Kochan et al., 2003; Pendry, Driscoll, & Field, 2007). In addition, according to Dobbin and Kalev (2018), five problematic features of diversity training were identified. First, it is difficult to change people's minds for short-term educational interventions. Second, diversity training may activate stereotypes. Third, diversity training inspires unrealistic confidence in diversity programs. Fourth, diversity training may leave white people feeling left out. Fifth, people may react negatively to external controls on their thoughts and behavior and perform poorly in their jobs when they lack autonomy. Therefore, it is important to consider those problems to make diversity training more effective.

Diversity Management and Lookism

Diversity management is beneficial to both employees and organizations (Rabl, del Carmen Triana, Byun, & Bosch, 2020). For example, Thomas (1990) suggested that diversity management provides the possibility of anti-discrimination and equality practices into companies in a friendly manner. Creating a diverse, friendly working environment through diversity management is one of the key factors for improving organizational competitiveness and efficiency along with the business purpose and market advantage (Wrench, 2003). In addition, effective diversity management is important to increase organizational efficiency and effectiveness, promote quality, creativity, innovation, and attract and retain talents (Ozbilgin & Tatli, 2008). Kim and Park (2017) have shown that diversity management positively influenced organizational fairness. Furthermore, they indicated that diversity management could build employees' interpersonal trust through improving fairness in the organization.

Lookism is problematic for organizations because it is unrelated to a person's ability to do their job and using ability or service skills as criteria for employment decisions can lead to inefficient or unsatisfactory results (Holtom, Mitchell, & Lee, 2006). Increasing the awareness of employment discrimination has led to the spread of "diversity management" all around the world (Hughes, 2016; 2018; Shore et al., 2009). Diversity refers to "differences between individuals on any attribute that may lead to the perception that another person is different from self" (Van Knippenberg, De Dreu, & Homan 2004, p. 1008). Furthermore, diversity in the workforce is "the composition of work units (work group, organization, occupation, establishment or firm) in terms of the cultural or demographic characteristics that are salient and symbolically meaningful in the relationships among group members" (DiTomaso, Post, & Parks-Yancy, 2007, p. 474). In addition, organizational diversity management is defined as "a set of managerial actions aimed at either increasing diversity, and/or promoting amicable, productive working relationships" (Jonsen, Maznevski, & Schneider, 2011, p. 36).

According to Fujimoto and Härtel (2017), effective diversity management should include the following activities:

(1) inclusion of minority group members in the organizational decision-making process; (2) organizational random and stratified sampling to establish multiple teams that reflect the heterogeneous composition of an organization; (3) equal opportunity and equal turn-taking to speak in each team; (4) enlarging

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and challenging participants' perspectives through interpersonal interaction with different employees; and (5) the final decision is reached in a form of common agreement or positive dissensus. (p. 1120)

In addition, Abaker, Al-Titi, & Al-Nasr (2019) suggested that organizational policymakers should develop and implement policies that 1) encourage organizations to recruit individuals with a diverse background, 2) improve employee retention, and 3) provide fair compensation and benefits systems. Therefore, diversity management is an important human resource practice for reducing lookism in the workplace.

Employment Process and Lookism

Previous studies have shown that employers practiced implicit or explicit lookism in the hiring process (López Bóo, Rosi, & Urzúa, 2013; Niu, 2018; Niu, et al., 2019; Ruffle & Shtudiner, 2014). For example, Chiu and Babcock (2002) found that Human Resource Management (HRM) specialists were influenced by lookism, and they believed that physical attractive individuals had more qualified work experiences and job skills. They tended to screen out perceived unattractive applicants after they reviewed their resume attached to the photo. In addition, López Bóo, Rosi, and Urzúa (2013) found that job applicants with a perceived attractive appearance have more interview opportunities than perceived unattractive individuals. In addition, Maurer-Fazio and Lei (2015) conducted an experimental study across four occupations: administrative assistant, software engineer, accountant, and sales representative. They found similar results with previous studies; a perceived unattractive female applicant had to submit 41% more applications than a perceived attractive one with equal qualifications to get the same number of interviews.

Employers could judge applicants' physical attractiveness through access to their social media profile or during the interview. Therefore, establishing "blind" hiring procedures is a way to reduce lookism by the function of human resource development and management (Behaghel Crépon, & Le Barbanchon, 2015). Research has shown that employment discrimination was decreased by using anonymous applications (Goldin & Rouse, 2000; Krause Rinne, & Zimmermann, 2012). Therefore, removing identifying information from applications and restricting employers from searching for applicants' profiles on SNS are effective ways to reduce employment lookism. In addition, Hammer (2017) noted that job interviews could be conducted via telephone instead of through a face-to-face meeting, which employers can discern work related personality characteristics form the voice. However, linguistic profiling is another issue should be considered in the workplace, when a phone interview is conducted (Hughes & Maimseishvili, 2018). In order to reduce lookism and linguistic profiling, multiple people could be involved in the interview process. The interview could be conducted by people who do not make decisions, and then the interview could be transcribed to text. Finally, decision makers could only review the interview text rather than see or listen the candidates to prevent discriminatory practices.

Automated hiring systems have been increasingly used in recruitment and hiring practices by human resource professionals (Bogen & Aaron, 2018). Shields (2018) reported 98% of Fortune 500 companies were estimated that use applicant tracking systems in their hiring process. The forms of automation help to detect and mitigate discriminatory practices in the process of sourcing, screening, interviewing, and selection. Bogen and Aaron (2018) have shown the evidence that applying automated hiring systems is perceived efficiency evaluations, lower cost, and diversity and inclusion promoting. However, Sánchez-Monedero, Dencik, and Edwards (2020) noted that very few processes of hiring decision were taken

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without any human intervention. In addition, they concluded a concern about the lack of transparency of automated hiring systems work process, like the approach used to detect the discriminatory practices. Therefore, it is still necessary to discuss how and where the automated hiring systems should be applied.

FUTURE RESEARCH DIRECTIONS

For instance, the influence of lookism should be studied over a wider range of occupations. Also, the influence of physical attractiveness should be measured more precisely across different cultures on both genders. Both qualitative and quantitative studies could be conducted. For the quantitative studies, they could explore the influence and existence of lookism on employment decisions in different jobs and cultures. Experimental studies, such as resume audits, should be with priority consideration because of the high validity. Qualitative studies could explain the influence of lookism on people's perceptions across different cultures because it is important to more deeply understand lookism behaviors.

In further studies, making a difference in the way that qualified applicants are selected would be a good focus. Employment discrimination has been found in previous studies, so it is significant to improve the issues of employment discrimination and help people establish a healthy employment environment. Moreover, researchers could look forward to the benefits of neutral BFOQ standards in the selection process. BFOQ standards have been practiced in the United States; in order to adapt it to other countries, it is necessary to let people understand its benefits.

Studies investigating strategies to alleviate the pressure of lookism on career-oriented women are also needed in the future. These studies would provide resolutions and recommendations for women and help women develop their careers. Mixed methodologies could be a good way to study the topic as well. Specifically, questionnaires supplemented with in-depth interviews could provide greater insights into the topic.

Possible theoretical bases for future studies may include utilitarianism, social identity theory, conflict theory, and resistance theory. Developing theories and conceptual frameworks could support and explain the current issues of lookism in the workplace.

CONCLUSION

Lookism issues have been studied in the fields of economics, social science, physiology, and business. Studies have shown that physical appearance has affected employers' judgment about the quality of a particular employee (Chiu & Babcock, 2002; Simorangkir, 2013; Sims, 2015; Wen, 2009). Employees are negatively impacted by lookism as this could cause them to experience unethical procedures in the workplace (Chiu & Babcock, 2002). However, in the appearance-oriented culture, lookism is a broad issue. Silence seems like the most effective "reasonable alternative" to respond to this issue, but this stifles employees' voices and makes them passive victims of discrimination (Li, Min, Belk, Kimura & Bahl, 2008; Zhang, 2012). At the same time, attractive individuals may support and practice lookism to maintain their priority (Chae, 2019). Therefore, it is important to increase the awareness of lookism in the workplace so that people can gradually realize the risk and harm of lookism, and then express the willingness to eliminate illegal physical appearance discrimination.

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A diverse workforce could lead organizations to expand the talent pool, take social responsibilities, meet the needs of diverse customers, and create a more competitive advantage for company performance (Point & Singh, 2003). Therefore, the issues and effects of lookism should be addressed in different employment stages, such as recruitment, selection, promotion, termination, etc. To establish a diverse environment in the workplace, previous research has suggested reducing lookism through establishing related policies and legislation, implementing diversity training and education, using diversity management strategies, and having a transparent employment process.

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KEY TERMS AND DEFINITIONS

Beauty Is Beastly: Indicates that a perceived attractive appearance can be a disadvantage for women when applying for traditionally masculine jobs.

Bona Fide Occupational Qualifications: Allows employers to make employment decisions based on prohibited criteria if it is necessary for the particular occupations.

Diversity Management: A set of managerial actions to increase diversity, and/or promote amicable and productive working relationships.

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Diversity Training: Educational activities provided to employers and employees in the workplace, which can improve the acceptance of colleagues with different cultural backgrounds, physical appearance, gender, age, etc.

Explicit Lookism: Refers to that an individual behaves negatively toward members of a disadvantaged group regarding physical appearance through verbal and nonverbal antagonism, avoidance, segregation, physical attack, and extermination.

Implicit Lookism: Unconscious discrimination or bias regarding physical appearance.

Lookism: Refers to physical appearance discrimination or physical attractiveness bias by which preferential treatment is given to those who are deemed attractive in a way that discriminates against those who have less physical charm.

What Is Beautiful Is Good: People considered physically attractive are usually attributed with characteristics such as higher income, better social skills, friendliness, happiness, and health.

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Chapter 95
Gender Differences in Quality of Work Life:
An Empirical Study

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ABSTRACT

The purpose of this study is to investigate gender differences in the level of the quality of work life between male and female employees in IT industries. The sample comprised of 150 people, out of which 90 were males and 60 were females from IT industries. Quality of work life was measured through a seven-dimensioned quality of work life (QWL) scale developed by Angus S. McDonald. Following data collection, significant differences regarding quality of work life were examined by using t-test. The findings indicated significant difference in the exhibition of most of the facets of quality of work life between the two groups. These insights can be used for the improved level of quality of work life between males and females in IT industries. This paper presents data and provides insights into the level of quality of work life of the employees.

INTRODUCTION

The mantra for creating a sensation in a long run for any organization in the competitive market lies in how it attracts, recruit, retain and motivate its workforce. More and more employees are realizing that like machine and money, **personnel** are a similarly predominant input in the continued existence of an organization in this turmoil world. Organizations require to adopt flexible approach so that they are equipped to develop their labour force. Therefore, organizations are needed to agree to take upon a strategy to enhance the employees *'Quality of work life'* to assure equally the employee needs and organizational purpose.

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Work is pervasive in all spheres of life of human beings. As the significance of human resource management, the level of education and knowledge is increasing day by day. It is not enough in organizational context to create flexible schedule, less stressful job and safe working environment, rather employees are more concerned with high *Quality of work life.*

The notion of Quality of work life was first came into the knowledge in early 1960 but it was possibly coined originally in Arden House in 1972 at the first international conference (Louis Davis & Cherns, 1975) and the notion cover a wide range of organizational phenomenon (Loscocco and Roschelle, 1991).

Different scholars have different connotations for the variable "Quality of work life". Earlier Quality of work life was considered from the perspectives of working conditions and their impact on job satisfaction of employees. But now the scenario changes, as it has been viewed from the humanistic perspectives i.e. first considered as a human being and then an employee. Glasier (1976) believes that the term QWL is considered more than a job satisfaction, adequate payroll, and good working environment, more even than an equal employment opportunity. According to Walton (1982), the other important factors except from technological advancement of the economic growth and productivity is the QWL.

In this study, we analyse the growth of the latest economy from the vintage point of employees i.e. QWL which offers a multifaceted assessment for both men and women. Therefore, the study of quality of work life among men and women employees in IT industry is of paramount importance.

Conceptualizing the Variables

The present study has adopted the notion of quality of work life which was propounded by Angus McDonald (2001) and is based upon the two notional approaches given by Nadler and Lawler (1983) and Loscocco and Roschelle (1991). They have defined quality of work life as an "employees' attitude towards, and perception of work and organization", and conceptualized the term quality of work life with the factors as:

(i) **Support from manager:** The workforce can freely talk to their manager. The Employees believe that they have received sufficient supervision and supervisor is having adequate knowledge for the same.
(ii) **Freedom from work related stress:** The workforce believe that their assigned load is reasonable and they are stress free at the workplace.
(iii) **Salary and additional benefits:** The financial benefits in terms of the work and their education, previous work experience and responsibilities at work are adequate.
(iv) **Job satisfaction, challenge, use of skills and autonomy:** The amount to which employees perceived that their work is enjoyable, stimulating, challenging and offering variety and enjoy sufficient autonomy.
(v) **Relationship with work colleague:** The degree to which employees presume that there is good working culture among colleagues and they can develop healthy relationship at work.
(vi) **Involvement and responsibility at work:** The degree to which employees feel they are involved in the organization's work and have opportunities to contribute to decisions at work.
(vii) **Communication, Decision making and job security:** The degree to which two way communications within the organization is perceived. Employees feel the job security and they do not need to look for other employment.

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LITERATURE REVIEW

Tabassum, A., et. al., (2011) in the study reported that a significant difference exists in the following factors of QWL between men and women employees. The factors of QWL like adequate and fair compensation, attention to job design, employee relations, job assignment and flexible work schedule,has significant differences in the QWL.

Schoepke, J., et. al., (2004) in the study examined quality of working life (QWL) in a in five companies which belongs to different information technology (IT) jobs. The study revealed that women employees in IT jobs report greater organizational involvement than men employees.

Lad, N. N. (2016) examined the impact of gender and working area of the employees on dependent variable (quality of work life and mental health). The study showed that gender with other independent variable has significant influence on quality of work life of the employees.

Thakur, R., & Sharma, D. (2019) examined the impact of various demographic variables including gender on QWL of employees in Himachal Pradesh Power Corporation Limited (HPPCL). Results revealed that gender has no impact on QWL.

Rama J. Joshi (2007) in the study revealed that women workers show high satisfaction towards QWL exclusively in banking, PSUs, insurance and hospitals.

OBJECTIVES

The main purpose of the study is to assess the significant differences in the Quality of Work Life of working males and females in NCR region.

HYPOTHESES

H1 – There is difference in the dimensions of QWL as Support from manager on the basis of gender (male and female employees).

H2 – There is difference in the dimensions of QWL as Freedom from work related stress on the basis of gender (male and female employees).

H3 – There is difference in the dimensions of QWL as Salary and additional benefits on the basis of gender (male and female employees).

H4 –There is difference in the dimensions of QWL as Job satisfaction, challenge, use of skills and autonomy on the basis of gender (male and female employees).

H5 --There difference in the dimensions of QWL as Relationship with work colleague of on the basis of gender (male and female employees).

H6 – There is t difference in the dimensions of QWL as Involvement and responsibility at work on the basis of gender (male and female employees).

H7 – There is difference in the dimensions of QWL as Communication, Decision making and job security on the basis of gender (male and female employees).

H8 – There is difference in the Quality of Work Life on the basis of gender (male and female employees).

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RESEARCH METHODOLOGY

Sample: The total sample consists of 150 employees working in IT industries at different supervisory levels. Out of which 90 employees are males and 60 are females. Out of 200 surveys instrument were distributed, 168 were received. Out of the received sample, 18 were rejected because of omitted values. Questionnaire was distributed through proper channel (HR of the company) with prior permission from the organizations containing the aim of the research. The questionnaires consist of demographic variables as consist of Name; Tenure; Age; Marital Status; Sex; Educational Qualification; Rank; and Salary (as optional).

Instruments: Following questionnaire was used for conduct the study:

Quality of work life was evaluated by using the scale which was propounded by Angus S. McDonald. The scale consists of seven dimensions and 53items and rated on a 6-point scale. The reliability of the QWLS scale was .94.

***Scoring and Analysis*:** The Scoring of the questionnaire was done as per the given manual instructions. The analysis was done by T-Test which calculates the Mean and SDs by using SPSS v. 20.0.

RESULTS AND INTERPRETATIONS

The objectives of the research were to evaluate the significant differences in the Quality of Work Life on the basis of males and females working in the different organizations of NCR. To test the abovementioned hypothesis, t-test was applied to study the differences by calculating Means and Standard deviation.

To test the differences regarding seven dimensions and total quality of work life of men and women employees, independent T-Test was calculated. The research specifies that there is a significant difference between the male and female IT employees with respect to most of the factors of quality of work life. The resulting p-value of **t-test in most of the cases is lower than the critical value (i.e., .05),** which indicates a significant difference on the basis of gender (male and female) of IT employees from the population.

Table 1 indicates the significant difference in the demonstration of Quality of Work Life ($t= 7.08$, $p < 0.05$). Also the mean score was 183.70, which is greater in comparison to that of male employees ($M= 162.44$), thus exhibit that the female employees have higher levels of quality of work life.

Table 1 indicates the significant differences in the factors of quality of work life. The disposition of Support from manager is higher (t-value$= 6.60$, $p < 0.05$), as the mean score of female employees is higher ($M= 35.93$) in comparison to the mean score of male employees, which is 29.89. There is significant difference in the Freedom from work related stress of men and women employees with the calculated t-value as 3.95, $p < 0.05$. It is also apparent that the exhibition of Freedom from work related stress is higher in case of female employees as $M= 29.52$ and that of male employees as $M= 26.61$. Significant difference has been found in the Salary and additional benefits of males and females (t-value = 2.88, $p < 0.05$), which indicates that SAB is expressed more in male employees with $M = 15.57$ in comparison to that in case of female employees with the mean score as 13.67. The disposition of JSCA is higher in the case of male employees (t-value = 4.67, $p < 0.05$), as the mean score of male is higher ($M=41.18$) in comparison to the mean score of females which is 36.75. Significant difference has been found in the Relationship with work colleague of males and females (t-value = 3.30, $p < 0.05$), which exhibit that RWB is expressed more in female employees with $M = 19.22$ in relationship to that in case of male employees with the mean score as 17.66.Significant difference has been found in the Involvement and

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responsibility at work of males and females (t-value = 4.51, $p < 0.05$), which shows that this dimension is expressed more in female employees with M = 16.17 in comparison to that in case of male employees with the mean score as 15.83. Similarly, there is significant difference in the Communication, Decision making and job security of men and women employees (t- value = 4.73, $p<0.05$). That is, the exhibition of Communication, Decision making and job security is high in females with the mean score as 36.10, in comparison to the males with their M= 31.78. On the whole, the result table indicates that the Quality of Work Life of female employees is better in comparison to male employees.

Table 1. Gender Differences among QWL dimensions

Variables	Gender	N	Mean	Std. Deviation	Std. Error Mean	t-Value
SMS	Male	90	29.89	8.711	.779	6.60
	Female	60	35.93	4.562	.484	
FWS	Male	90	26.61	5.586	.500	3.95
	Female	60	29.52	4.902	.520	
SAB	Male	90	13.67	4.748	.425	2.88
	Female	60	15.57	4.793	.508	
JSC	Male	90	36.75	7.312	.654	4.67
	Female	60	41.18	6.112	.648	
RWC	Male	90	17.66	3.689	.330	3.30
	Female	60	19.22	2.999	.318	
IRW	Male	90	15.83	4.844	.165	4.51
	Female	60	16.17	7.408	.149	
CDJ	Male	90	31.78	7.042	.630	4.73
	Female	60	36.10	5.862	.621	
Total_QWL	Male	90	162.44	23.245	2.079	7.08
	Female	60	183.70	19.171	2.032	

DISCUSSION

The objective of this study was to evaluate the gender differences of IT employees; the study considers the quality of work life in the work setting, including supervisory support, job security, stress and communication etc. Results from the current study reported that there is significant difference in the exhibition of support from manager of males and females. Consistent with the existing research, we identified that female exhibit more than males in terms of Support from manager (Van der Boon, 2003), Stanford et al.,1995). It is also apparent that the exhibition of Freedom from work related stress is higher in case of female employees (McDonald and Korabik, 1991). The finding of the paper showed that significant difference has been found in the Salary and additional benefits which shows that SAB is expressed more in males to that in case of female employees (Laura M. Crothers (2010)). The disposition of JSCA is higher in the case of male employees in terms of promotion, supervision, work content, pay and co-workers (Vathsala Wickramasinghe, 2009). The results also revealed that female employees expressed

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more in the Relationship with work colleague as women. Probable reason is that women's are considered as "relations oriented" than "production-oriented". Similarly, significant difference has been found in the Involvement and responsibility at work which shows that IRW is expressed more in female employees (Spence and Robbins (1992)). Furthermore, the exhibition of Communication, Decision making and job security is high in females in comparison to the males ((Powell, 1990)).

On the whole, additional result from our analyses indicates Quality of Work Life of female is better in comparison to males in IT industry. A plausible explanation may be that, men and women assess the same aspects of work but value them very differently. In addition to that, men place greater value on pay, power, results, achievements and status; women place greater value on relationships, recognition, friends, respect, and virtues such as honesty and integrity. So, all the eight hypothesis are therefore, supported.

CONCLUSION

The study concludes and contributes towards the gender differences literature of QWL variables in IT Industry. Results of this study have larger scope for managers and academicians to practically implement quality of work life programmes in the organizations. This research study helps the interested organizations and the practitioners to implement QWL programmes and relish the potential of employees fully towards the success of organization.

The sample size could be increased to have better results which can further be generalized as data collected was from the region of NCR, India. It is suggested to present gender differences of QWL in these findings which can be extended to industries. Further research should be aimed to focus on other industries, which would allow for researchers to gain in-depth insights into the gender differences of QWL. Hopefully, this study will act as a catalyst base for other research.

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Chapter 96
Gender and Labor Market: A Review From the Perspective of Insurance Premiums Incentives, Supports, and Deductions in Turkey

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ABSTRACT

Gender is defined as the tasks, functions, and roles attributed to women and men in the public and private areas in society. The concept of gender is important in social state policies. The social state is a state that deals with the economic and social situation of individuals and seeks to ensure a minimum level of living, social security, and justice. In this kind of state disease, disability, death, unemployment, and similar cases, social security and assistance programs are in the foreground. Gender discrimination in the labor market in Turkey is a major problem. Women face a number of obstacles in this market. In particular, gender-based occupational discrimination affects women's position in the labor market. In addition to factors such as inflation, growth, and unemployment, gender roles play a role in the effectiveness of the female labor force in these markets. In this study, labor markets in Turkey will examine on the basis of gender and will be discussed in terms of insurance premiums and tax incentives for the period 2000-2019.

INTRODUCTİON

Women confront with various barriers in their working areas such as education, health, social security, politics and non-governmental organizations (NGOs). There is gender-based discrimination in these areas. Women are disadvantaged compared to men in terms of participation in employment. In patriarchal societies, women have been responsible for household chores and child care. The vast majority of women are therefore far from social production. In fact, these skills provide them with employment

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opportunities in occupations and fields of work, which are an extension of their work at home. However, women continue to be a secondary source of labor. With capitalism, women have started to work such as services sector, health, education, textiles, food, etc. in areas. Despite equal pay for equal work laws, women's wages were lower than men's. In times of economic depression, primarily the dismissed are women. For these reasons, they can hardly come to decision-makers, managers, organizing positions. In Turkey, the traditional infrastructure is changing very slowly. Gender-based discrimination and male domination are present in all areas. Therefore, some institutions and organizations try to solve employment problems related to women. It is tried to increase female employment in labor markets. For this, first of all, financial burdens on enterprises should be reduced. There are many ways in reduce financial burdens on enterprises. For example ınsurance premiums incentives, supports and deductions can be used to reduce this burden. In this study will examine supports and deductions in terms of gender sensitivity for the perıod 2008-2019.

Concepts and Basic Definitions

This section describes the basic concepts in the study. In this context, the concepts of gender, gender equality / inequality, labor and employment are explained. Gender was first used in the 1930s and defined. According to this definition, psychological characters is different from sex. In 1972, Ann Oakley first used this concept in sociology. Gender; "Defines the roles, duties, rights, responsibilities and behaviors determined by society and culture for men and women. The roles of femininity and masculinity, men and women presentation themselves, speech, behavior patterns and dress patterns differ from society to society (Connell, 2002). Gender is defined as "the expectations of women and men for social and cultural roles" (Cherry, 2005: 157).

The concept of gender equality/inequality refers to "how determine social, cultural characteristics and norms the relationship between men and women and the power differences between these two genders" (World Development Report, 2012: 4). Gender equality recognizes the different needs and interests of men and women and requires a redistribution of power and resources. The goal of this equality, sometimes called material equality, goes beyond equality of opportunity. Men and women are considered to have different needs, preferences and interests (Reeves ve Baden, 2000: 10).

Usually men work in high status professions, and women generally work at lower wages, in other words, gender-based wage gap, type of occupation and lower wage for part-time workers are examples of gender inequality in employment (UNECE, 2015).

The labor means the part of the population in a country that is productive, that is, participating in economic activity. The labor force refers to the total number of employees in a profit-generating business and population between the ages of 14-65.Eemployment means "participation of production factors (labor, capital, entrepreneur and natural resources) in the production process optimally.

Women's Labor and Employment in the Historical Context of Gender in Turkey

The Republic of Turkey was proclaimed in 1923 and began a contemporary restructuring process. Major reforms have been made in relation to women and women labor. Various changes have been made in the economic and social areas for women.

With the 1924 Constitution, it was made compulsory for everyone to be a primary school graduate without distinction between men and women (Doğramacı, 1997: 81). The Turkish Civil Code adopted

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in 1926, is one of the biggest changes made on behalf of women. Women have the right to divorce, custody and the right to savings on property. In the political field, the right to participate in municipal elections was granted to women in 1930. In 1934, women were given the right to vote and to be elected (Tatlıdil, 1992: 5). "With the General Health Protection Law enacted in 1930, the first arrangements were made for the protection of young workers and women working in industrial enterprises. In this law, the age, duration, working conditions, etc. were regulated in order to protect the rights of women and children" (TİSK, 1992: 95). "The law on occupational accidents and diseases and maternity insurance" was issued in 1945. In 1950, the law on wage cannot be differentiated according to gender entered into force (Ekmekçi, 2004: 32). After 1950, with the urbanization, women entered the business life actively. "The developments in the service sector in the 1960s have enabled women to exist in the working life. The number of women employed in the cities has increased since 1970. After 1980s, the service sector in the women's job demand has also been inadequate. It is stated that between 1980 and 1985, the rate of dismissed women in the industrial sector was 20% "(Ecevit, 1993: 117-122).

Nowadays, the roles and responsibilities of women in the family life limit their promotion opportunities. These reasons prevent women from taking part in senior management positions.

The Place and Importance of Women in the Labor Market

The employability of women is important for equality between men and women. Employment of women ensures that they are economically independent. Women's employment is very important for sustainable economic growth and development. Increasing female participation in the labor force leads to a decrease in poverty. Thus, there is an increase in gross national product.

The participation of women in the labor force also affects the shares allocated to health and education, fertility and child mortality. The participation of women in the labor force affects household saving habits. In this context, this increase in saving behaviors causes current deficit and insufficient savings. (Günsoy & Özsoy, 2012: 25).

Working life increases women's social dignity and improves their position in the family. Responsibilities within the family cause the woman to make a choice whether to work or not to work. The labor market in Turkey, women's labor force participation levels are low. In particular, non-agricultural unemployment rates are higher than for males. Women have longer working hours than men. As well as paid work, home work and care work carried out by women at home is as important. However, these were not paid and were not considered to create economic value. These activities are equal to one third of the total production in the world (UNDP, 2015). The unequal workload in the household prevents female employment For this reason, women work in the informal jobs at a higher rate in the labor market."In developed countries, it is observed that women spend about 6 hours a day on unpaid work, while men spend only half the time" (Gauthier et al., 2004). Therefore, inequality between men and women increases in terms of household workload.

Characteristics and Barriers to Women's Employment

The first of the barriers to female labor-related demand growth is not creating employment growth in Turkey (Yeldan, 2009). Therefore, women will have little opportunity to find a job. The second is the suitability of sectors for the employment of women. Agriculture is still the first sector in women's employment. However, women have the status of unpaid family workers in this sector. However, the sector

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in which women are most concentrated is the services sector. Therefore, it is necessary to develop business lines that will increase the employment of women in this sector. Third, the level of development and size of the sectors in which women will be employed. If there is no growth in the sectors such as textiles, food and chemistry where the female labor force is concentrated intensively, employment of women in these sectors will be difficult (Ecevit, 2010: 11). The distribution of employment by sectors is shown in Table 1.

Table 1. Distribution of employment by sectors (%)

Employment	Agriculture	Industry	Services
Woman	28,3	15,6	56,1
Male	15,4	31,4	53,2
Total	19,4	26,5	54,1

Source: TÜİK (Turkish Statistical Institute), 2018.

According to Table 1, total employment rate in agriculture sector is 19.4 percent, male employment rate is 15.4 percent, and female employment rate is 28.3 percent. In the industrial sector, total employment rate is 26.5 percent, male employment rate is 31.4 percent and female employment rate is 15.6 percent. In the service sector, the total employment rate is 54.1 percent, 53.2 percent for men and 56.1 percent for women. In Turkey, with the largest share of female employment in the sector, the services sector. As can be seen in Table 1, female employment is higher in services sector compared to other sectors. In the industrial sector, male employment is about twice as high as female employment. In the agricultural sector, female employment is about twice as high as male employment. In terms of women's employment, the agricultural sector ranks first in the early 2000s. However, over time, the services sector has replaced the agricultural sector. Demand for female labor force in manufacturing and services has increased in countries following export-oriented growth policies.

Informality, which expresses working without affiliation with any social security institution, is one of the most important problems in terms of women's employment. Informal employment rates of women are much higher than those of men. In June 2019, informal employment rate is 34.3 percent and informal employment rate of women is 44.6 percent

Part-time work and the majority of work such as home services and childcare are done by women. Therefore, there is discrimination based on gender. One of the most significant indicators of discrimination is the difference in wages and incomes. Gender-based wage gap is high levels in Turkey (Dayıoğlu and Kasnakoğlu, 1997). TÜİK data show that women earn less than men.

FACTORS AFFECTİNG WOMEN'S EMPLOYMENT

In Turkey, the factors affecting the participation of women in the labor force, women's and spouse's education level, age level, marital status, presence of informal employment, wage inequality, and are effective legal regulations. Factors affecting female labor force participation have cultural, economic and demographic characteristics

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Level of Education

One of the most important factors affecting the female labor force participation rate is education level. In Turkey female labor force participation rate according to education level is shown Table 2.

Table 2. Female labor force participation rate by educational level (%)

Female Labor Force	Illiterate	Secondary School	High School Graduate	Vocational or Technical High School Graduated	Graduated From A Universty
Rate	15,9	27,7	34,3	42,6	72,7

Source: TÜİK, 2018.

According to Table 2, labor force participation rate of illiterate women is 15.9 percent, labor force participation rate of women in education below high school is 27.7 percent, labor force participation rate of women in high school graduates is 34.3 percent, labor force participation rate of women in vocational or technical high school graduates is 42.6 percent and labor force participation rate of women in graduated from university is 72.7 percent.

Labor force participation rate of women whose education level increases is increasing. The rate of illiterate women is decreasing gradually. Women with a high level of education are less affected by economic fluctuations.

The participation of women in the labor force also affects the education level of their spouses. The income of highly educated men will also be high. The spouses of these men will have a lower labor force participation rate. The fact that this situation affects female labor force participation varies according to the qualification level of women and whether they live in urban or rural areas. For example; for high - skilled women living in urban areas, their spouses' education level is not an important factor. For the women living in rural areas, the education level of the spouses is insignificant. For low-skilled women living in urban areas, the higher the level of education of the spouse, the lower the participation of women in the labor force. (Uraz, Aran, Hüsamoğlu, Okkalı, Şanalmış, Çapar, 2010: 11).

Age Level

The labor force participation rate of women also varies according to age. In this respect 15 years and older women's labor force participation rate in Table 3 are shown.

Table 3. The labor force participation rate of women 15 years and over in Turkey

Year	Population 15 Years and Over	Labor Force Participation Rate %	Unemployment Rate %	Non-Agricultural Unemployment Rate %	Employment Rate %
2019	31.245	34,6	17,0	21,4	28,7

Source: TUİK, 2019. http://www.tuik.gov.tr/PreTablo.do?alt_id=1007

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According to Table 3, as of January 2019, the number of female labor force aged 15 and over is 31.245. Female labor force participation rate is 34.6%, female unemployment rate is 17%, female non-agricultural unemployment rate is 21.4%, female employment rate is 28.7%. While the labor force participation rate of women decreases, it increases between 25 and 44 years of age.

The fertility of women also affects female labor force participation rate. As the number of children increases, women tend to quit their jobs. Women with no children have a high labor force participation rate. It is also seen that women withdraw from business life as long as they have children.

Marital Status

Another factor affecting the participation of women in the labor force in our country is the marital status of women. The labor force participation rate of married women is quite different from that of women who have never been married or divorced. When the data of the recent years are analyzed, the labor force participation rate of women increased regardless of the marital status. Although women are married and have children, they prefer to be in business life.

Other Factors

Inadequacy of institutions for care services, pre-school care and education institutions and lack of full-time schools are barriers to women's participation in employment. Likewise, the number of institutions providing public or private services in elderly and disabled services is extremely insufficient. Other factors affecting women's participation in the labor market are informal employment wage inequality and legal regulations.

Informal Employment

One of the factors affecting the labor force participation of women in Turkey is informal employment. It is known in the statistics that the non-working segment is actually run without registration. It is observed that women are informal especially in the textile sector. The reason for this type of employment is that women with children do not have places to leave their children or they are expensive. This situation may lead women to work or home work such as textiles, knitting and tailoring (Özbay, 1982: 186). When women participate in informal employment they are not able to take advantage of the benefits provided by the insurance incentives.

Wage Inequality

Increasing social and economic differences increase inequalities towards women. Therefore, it is necessary to ensure equality between men and women in political, social and economic life (Kadının Statüsü Genel Müdürlüğü, 2008: 5). One of the criteria that will ensure this is equal pay. Wage inequality appears to be common, particularly in the private sector. It is known that women are employed at lower wages than men. Women, on the average, may receive lower wages, even if they are in the same occupational categories as men (Cam, 2003: 7).

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Legal Regulations

Among the factors that determine female labor force participation are legal regulations. Articles such as re the head of the family is male in the civil law adversely affected the female labor force participation rate. The Labor Law prohibits women from working in certain areas. For example; It is forbidden to employ women in underground and underwater works such as mines and cable laying, sewerage and tunnel construction. Although the relevant laws are aimed at protecting women; prevents entry to high-wage jobs (Zeytinoglu, 1998: 193). It is a traditional gender-based division of labor that prevents women from working in income-generating jobs and benefiting from social security rights. Social security rights are very important for women's employment.

HİSTORİCAL DEVELOPMENT OF SOCİAL SECURİTY SYSTEM İN TURKEY

There are no comprehensive regulation related to social security in Turkey until 1936. 3008 with the Labor Law for the first time the establishment of social insurance and the basic principles of social insurance has been determined (Tepekule, 2008: 40). In this law, the state is accepted as the only regulatory authority in the labor-employer relations (Yay, 2014: 154-155). In addition, in the law the subjects such as insurance branches to be established and the scope of social insurance for individuals are regulated under the heading of social assistance. With the law, the risks to be provided for social protection are determined as "work accidents and occupational diseases, maternity, old age, dismissal, illness and death". In this case, being insured is adopted on a compulsory basis (Levent, 2013). In 1950, T.C. The General Directorate of Retirement Fund(with the Law no 5434) was established (Oral et al., 2013: 25).

Apart from these social security arrangements, the most important development is the 1961 Constitution. Article 48 of the 1961 Constitution on social security states that everyone has the right to social security (Oral et al., 2013: 25; Gerek et al., 2013: 205).

In 1965, the Social Security Law no. 506 entered into force. In this context, a new set of rights has been introduced for workers in the status of workers (SGK, 2016). With the new Constitution adopted in 1982, the right to social security is constitutional guaranteed. Unemployment insurance was accepted by the law numbered 4447 in 1999 and was put into practice in 2000 (Yiğit, 2005: 76).

The Social Security and General Health Insurance Law No. 5510, which entered into force in 2008, has made various arrangements in this regard. Birth borrowing is one of these arrangements. Again with this law, agricultural insurance has been made compulsory for all farmers.

The social security rights of women in Turkey can be summarized as follows:

- Birth Borrowing, (Law No. 5510)
- Breastfeeding Allowance. (Law No. 5510)
- Birth Benefit Allowance For Civil Servants, (Law No. 657)
- Temporary Disability Allowance, (Law No. 5510)
- Birth and Breast-feeding Leave. (Law No. 5510)
- Marriage Allowance (Law No. 5510)
- Conditions for Employment of Female Workers in Night Posts, (Law No. 5510)
- Prohibition of Ground And Underwater Operation, (Law No. 5510)
- Death Insurance, (Law No. 5510)

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- Rights Provided to Women İnsured with Disabled Children (Law No. 5510)
- Women's Borrowing Abroad (Law No. 5510)
- Female Officer Night Watch (Law No. 657)
- Assisted Reproduction Method (Law No. 5510)
- Insurance of Women Who Do Handcrafts at Home (Law No. 5510)
- Providing Health Service to Women Who Are Violent Against Him (Laws No: 5510 And 6284),
- Regular Cash Aid for Women Who Passed Away Hers Husband (Ministry Of Family And Social Policies, Circulars 2012/6 and 2012/10).

In the Labor Law No. 4857, no discrimination is allowed in employer - employee relations. Discriminatory remuneration for similar work or work of equal value cannot be allowed. In the Labor Law, for women are protective regulations such as work conditions during pregnancy and lactation etc. Employees who have been sexually abused have the right to terminate the employment contract. There are regulations regarding maternity leave and parental leave in working life. All these articles in the law are social security activities for women. In this context, insurance premiums, incentives, supports and discounts are important in terms of gender equality.

The Insurance Premiums İncentives, Supports and Deductions in Turkey for The Period 2008-2019

In order to increase female employment in labor markets, financial burdens on enterprises should be reduced. Insurance premiums incentives, supports and discounts can be used to reduce this burden. Such practices also contribute directly to the development of the country. In Turkey for 2008-2019 period, insurance premiums incentives, supports and deductions are listed below:

- Insurance premium incentive for disabled insured employment
- 5 points deduction for disability, old age and death ınsurance premiums employer's share
- The premium incentive for employment of receiving unemployment allowance
- Insurance premium support for employment of young, women and occupational certificate holder
- Premium support dependent on ınvestment and employment
- Additional six points deduction
- 5 points deduction for insured who goes abroad
- Supporting occupational health and safety services
- İncentives for employment of beneficiaries of social services
- The ınsurance premium support for employment of graduated from on-the-job training program
- Minimum wage support
- Insurance premium support for research, development and design activities
- 4/b (Bağ-Kur: Social security organization for artisans and the self-employed) 5 points incentive
- Additional employment support
- Young entrepreneur ıncentive
- Employer's share ıncentive application of the unemployment ınsurance ın very dangerous category workplaces
- Quarterly fee support

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The listed above insurance premiums incentives, supports and deductions are important practices in terms of equality between men and women.

Evaluation of Insurance Premiums İncentives, Supports and Deductions in Terms of Gender Sensitivity for The Perıod 2008-2019

In this part of the study, the insurance premiums incentives, supports and deductions for 2008-2019 period will be discussed in terms of gender sensitivity. If there are arrangements for women in the related incentives, supports and deductions will be considered as gender sensitive incentives, supports and deductions. If there is no distinction between men and women, will be considered as gender neutral incentives, supports and deductions. If there are incentives, supports and deductions only for men, they will be considered as gender against incentives, supports and deductions

Evaluation of ınsurance premiums incentives, supports and deductions in terms of gender sensitivity for the perıod 2008-2019 shown in Table 4.

Table 4. The analysis of ınsurance premiums incentives, supports and deductions in terms of gender sensitivity (2008-2019)

İncentives, Supports Deductions	Legal Basıs	Scope	Applıcatıon Start Date	Gender Sensitivity
Insurance premium incentive for disabled insured employment	Law No. 4857. Article 30	The insurance premium is fully covered by the Ministry of Treasury and Finance. There is no application for women.	01/07/2008	There is gender neutral incentive. Gender sensitivity in this type of incentive is neutral.
5 points deduction for disability, old age and death ınsurance premiums employer's share	Law No. 5510. Article 81.	The relevant deduction is covered by the Ministry of Finance and Treasury. There is no application for women.	01/10/2008	There is gender neutral deduction. Gender sensitivity in this type of deduction is neutral.
The premium ıncentive for employment of receiving unemployment allowance	Law No. 4447. Article 50.	During unemployment benefit covered by the Unemployment Insurance Fund. There is no application for women.	01/10/2009	There is gender neutral incentive. Gender sensitivity in this type of incentive is neutral.
Insurance premium support for employment of young, women and occupational certificate holder	Law No. 4447. Temporary article 10	For the insured persons employed between 01/03 / 2011 and 31/12/2020, all of the employer's sahare of insurance premium is funded by the Unemployment Insurance Fund. Duration of use varies according to men and women, age and so on.	01/03/2011	There is gender sensitive support. Gender sensitivity in this type of support increased.
Premium support dependent on ınvestment and employment	Law No. 5510. Additional article 2.	Employer's sahare of insurance premium, the part corresponding to the minimum wage will be covered from the budget of the Ministry of Economy. There is no application for women.	19.06.2012	There is gender neutral support. Gender sensitivity in this type of support is neutral.
Additional six points deduction	Law No. 5510. Article 81.	In the disability, old age and death insurance premiums is provided after 5 points deduction, 6 points deduction. There is no application for women.	01/01/2013	There is gender neutral deduction. Gender sensitivity in this type of deduction is neutral.
5 points deduction for insured who goes abroad	Law No. 5510. Article 81.	The relevant deduction is covered by the Ministry of Finance and Treasury. There is no application for women.	01/06/2013	There is gender neutral deduction. Gender sensitivity in this type of deduction is neutral.

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Table 4. Continued

İncentives, Supports Deductions	Legal Basıs	Scope	Applıcatıon Start Date	Gender Sensitivity
Supporting occupational health and safety services	Law No. 6331. Article 7.	Dangerous and very dangerous class with fewer than 10 employees in the workplace, specific rate of minimum wage paid to the employer. Financed by SSI (Social Security İnstitution) . There is no application for women.	01/01/2014	There is gender neutral support. Gender sensitivity in this type of support is neutral.
İncentives for employment of beneficiaries of social services	Law No. 2828 Additional Article 1.	The relevant premiums is covered by the Ministry of Finance and Treasury for five years. There is no application for women.	19/02/2014	There is gender neutral incentive. Gender sensitivity in this type of incentive is neutral.
The ınsurance premium support for employment of graduated from on-the-job training program	Law No. Temporary article 15.	All of the employer's share of the insurance premiums is covered by the Unemployment Insurance Fund. There is no application for women.	23/4/2015	There is gender neutral support. Gender sensitivity in this type of support is neutral.
Minimum wage support	Law No. 5510 Temporary article 78.	Minimum wage support will be financed by the Unemployment Insurance Fund. There is no application for women.	27.01. 2016	There is gender neutral support. Gender sensitivity in this type of support is neutral.
Insurance premium support for research, development and design activities	Law No. 5746 Article 3.	Half of the employer's share of the insurance premiums will be covered by the Ministry of Finance and Treasury until 31/12/2023. There is no application for women.	10. 08. 2016	There is gender neutral support. Gender sensitivity in this type of support is neutral.
4/b (Bağ-Kur: Social security organization for artisans and the self-employed) 5 points ıncentive	Law No. 5510 Article 81.	5 point deduction in invalidity, old-age and death insurance premiums is covered by the the Ministry of Finance and Treasury. There is no application for women.	01. 10. 2016	There is gender neutral incentive. Gender sensitivity in this type of incentive is neutral.
Additional employment support	Law No. 4447 Temporary Article 19.	For the insured persons employed between 01/01 / 2018 and 31/12/2020, insurance premium is funded by the Unemployment Insurance Fund. Support period is 12 months. For the women older than 18 years, men between 18 and 25 years and the disabled people is 18 months from the date of employment.	01/01/2018	There is gender sensitive support. Gender sensitivity in this type of support increased.
Young entrepreneur ıncentive	Law No. 5510 Article 81.	Between the ages of 18-29, Insurance premiums of those who open a business for the first time, will be covered by the Ministry of Finance and Treasury for 1 year. There is no application for women.	01.06.2018	There is gender neutral incentive. Gender sensitivity in this type of incentive is neutral.
Employer's share ıncentive application of the unemployment ınsurance ın very dangerous category workplaces	Law No. 4447 Additional Article 4.	Employer's Share Incentive of The employment Insurance will be applied for 3 year at a rate of 1% . There is no application for women.	31/12/2018	There is gender neutral incentive. Gender sensitivity in this type of incentive is neutral.
Quarterly fee support	Law No. 4447 Temporary Article 19.	For insured persons who are employed between 01/02/2019 and 30/04/2019, covered by the Unemployment Insurance Fund. There is no application for women.	01/02/2019	There is gender neutral support. Gender sensitivity in this type of support is neutral.

Source: Related Laws, 2020.

Acording to Table 4. in the insurance premium incentives category, the following results were obtained:

- İncentives Insurance premium incentive for disabled insured employment: There is gender neutral incentive. Gender sensitivity in this type of incentive is neutral.

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- The premium ıncentive for employment of receiving unemployment allowance: There is gender neutral incentive. Gender sensitivity in this type of incentive is neutral.
- İncentives for employment of beneficiaries of social services: There is gender neutral incentive. Gender sensitivity in this type of incentive is neutral.
- 4/b (Bağ-Kur: Social security organization for artisans and the self-employed) 5 points ıncentive: There is gender neutral incentive. Gender sensitivity in this type of incentive is neutral.
- Young entrepreneur ıncentive: There is gender neutral incentive. Gender sensitivity in this type of incentive is neutral.
- Employer's share ıncentive application of the unemployment ınsurance ın very dangerous category workplaces: There is gender neutral incentive. Gender sensitivity in this type of incentive is neutral.

In the insurance premium supports category, the following results were obtained:

- Insurance premium support for employment of young, women and occupational certificate holder: There is gender sensitive support. Gender sensitivity in this type of support increased.
- Additional employment support: There is gender sensitive support. Gender sensitivity in this type of support increased.
- Premium support dependent on ınvestment and employment: There is gender neutral support. Gender sensitivity in this type of support is neutral.
- Supporting occupational health and safety services: There is gender neutral support. Gender sensitivity in this type of support is neutral.
- The ınsurance premium support for employment of graduated from on-the-job training program: There is gender neutral support. Gender sensitivity in this type of support is neutral.
- Minimum wage support: There is gender neutral support. Gender sensitivity in this type of support is neutral.
- Insurance premium support for research, development and design activities: There is gender neutral support. Gender sensitivity in this type of support is neutral.
- Quarterly fee support: There is gender neutral support. Gender sensitivity in this type of support is neutral.

In the insurance premium deductions category, the following results were obtained:

- 5 points deduction for disability, old age and death ınsurance premiums employer's share: There is gender neutral deduction. Gender sensitivity in this type of deduction is neutral.
- Additional six points deduction: There is gender neutral deduction. Gender sensitivity in this type of deduction is neutral.
- 5 points deduction for insured who goes abroad: There is gender neutral deduction. Gender sensitivity in this type of deduction is neutral.

In the insurance premium supports category, there is gender sensitive supports and gender sensıtıvıty ıncreased only two support types (insurance premium support for employment of young, women and occupational certificate holder and additional employment support). Other insurance premium incentives, supports and deductions; there is gender sensitive incentives, supports and deductions and gender

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sensitivity is neutral. According to these results, in the social insurance system insurance premiums incentives, supports and deductions are generally not gender sensitive in Turkey.

CONCLUSİON

Technological, sociological, economic development and changes have led to significant structural changes. These structural changes are also seen in the field of social security. Social insurances around the world try to provide services in line with the requirements of the social state principle. In our country, women have various rights within the scope of social security. the proclamation of the Republic of Turkey in 1923 and started a contemporary restructuring process. Major reforms have been made in relation to women and women labor. Various changes have been made in the economic and social areas for women. The employability of women is important for equality between men and women. In this context, gender discrimination is an important problem. Women face a number of obstacles in the labor market. Therefore, a number of studies are carried out to ensure gender equality in social state policy in Turkey. The factors affecting the participation of women in the labor force, women's and spouse's education level, age level, marital status, presence of informal employment, wage inequality, and are effective legal regulations. In the labor market, low level of participation of women in the labor force are outstanding. In particular, non-agricultural unemployment rates are higher than for males. In order to increase female employment in the labor market, first of all, financial burdens on enterprises should be reduced. Insurance premiums incentives, supports and discounts can be used to reduce this burden. The main contribution to the development of Turkey's increasing women's employment is to support socio-economic development and to realize the increase of welfare in a way to provide all segments of the society. In this sense, the overall goal is to create a competitive labor market that creates more and better jobs and can adapt to changing conditions and global markets. The targets set for achieving this goal in the future are as follows: The employment rate will be over 65 percent. Unemployment rate will be reduced to below 5 percent. The female labor force participation rate will be increased to over 55 percent. Unregistered employment rate will be reduced to less than 15 percent. Necessary discounts will be provided on insurance premiums incentives, supports and deductions for the promotion of women's employment. In this study, the incentives, supports and deductions of insurance premiums for the period 2008-2019 are discussed in terms of gender sensitivity. If there was arrangements for women in the related incentives, supports and deductions were considered as gender sensitive incentives, supports and deductions. If there was no distinction between men and women, were considered as gender neutral incentives, supports and deductions. If there was incentives, supports and deductions only for men, they were considered as gender against incentives, supports and deductions.

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Chapter 97
Gender Diversity in the Senior Management of Large Technology Companies

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ABSTRACT

As a key part of the fourth industrial revolution, technology companies have become the most valuable companies in the world in terms of market capitalization. Surprisingly, however, these companies have been overlooked by studies of gender diversity in corporate governance even though their highly distinctive features may cause major differences in gender diversity with respect to companies in other sectors. The goal of this chapter is therefore to provide the first characterization of gender diversity in the corporate governance of large technology companies—specifically those with the highest market value—and explore the relationship between gender diversity and business performance. To achieve this goal, descriptive statistical analysis is used. Data correspond to the period 2005 to 2017. The findings confirm the under-representation of women on the boards of directors of 162 publicly listed companies. The findings also show that the most profitable companies are those that have the greatest female representation on their boards of directors.

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INTRODUCTION

The issue of gender[1] in business is highly topical. This issue is subject to interpretation and, on occasion, biased approaches that often prove controversial. The interest that this issue has elicited from policymakers reflects the firm belief that boards of directors that have greater diversity are more effective and that women are under-represented on these boards of directors. These factors explain the recent tendency to implement actions that promote gender diversity in corporate management. Between 2008 and 2015, 32 countries implemented 42 policies to foster board diversity (Adams, 2016).

Such issues have also been addressed by scholars. Particularly during the last decade, many studies have investigated various facets of the relationship between the representation of women on companies' boards of directors and these companies' financial performance (Terjesen, Couto, & Francisco, 2016) and market image (Al-Shaer & Zaman, 2016), as well as the impact of this representation on decision making (Nielsen & Huse, 2010). However, this literature contains certain gaps. For example, there is a lack of consensus on the role of gender diversity in corporate governance (Isidro & Sobral, 2015). Furthermore, studies have generally focused on large companies, particularly publicly listed companies. This choice of focus results from two factors: the applicability of certain standards and guidelines, especially regarding the proportion of minorities that must be represented on the boards of these companies; and the greater data availability, which enables the analysis of performance, profitability, and financial structure.

It is much less common for studies to examine the issue of gender in senior management from a sector perspective. Sector analyses of the digital economy or the collaborative economy are practically nonexistent. The lack of such research is particularly relevant in today's context, which is characterized by the hyperconnectivity and technological revolution that define the so-called Fourth Industrial Revolution and that exert unprecedented effects on society (Cheong & Lee, 2017).

Consequently, this study focuses on the business sector that contributes the most to shaping the digital economy and that, in a sense, acts as a catalyst for the development of a new digital society, which is replacing the industrial society that dates back to the 19th century. Specifically, this study focuses on large companies, in terms of market capitalization, in the global technology sector. One example of the importance of this sector is the fact that the five largest companies in the world by market capitalization—Apple Inc., Alphabet Inc., Microsoft Corporation, Amazon Inc, and Facebook Inc. (Bloomberg L.P., 2018)—are all technology companies. This list reflects a radical change with respect to the previous decade, when the world's largest companies were banks, oil companies, and retailers.

Technology companies have a number of features that make analyzing female representation in this thriving business sector particularly interesting. These companies are characterized by a high proportion of employees with a background in technology, linked to qualifications or studies in STEM (Science, Technology, Engineering, and Mathematics) subjects. Traditionally, these subjects have been numerically dominated by men (Glass, Sassler, Levitte, & Michelmore, 2013). A priori, this dominance would suggest some selection bias in the senior management of these companies. In addition, the new business models that are adopted in the digital economy differ considerably from traditional models in terms of management and governance. Such differences relate to the profile of entrepreneurs, founders, and partners as well as the profile of customers. These new business models, coupled with the crucial role of technological and business development skills, call for professionals with a broad range of training and experience and, at the same time, a forward-looking and visionary mindset. Technology companies' governance structures are also notoriously flat, and personal leadership takes precedence over hierarchical leadership, with a predominance of young entrepreneurs as opposed to the generally older managers

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in traditional companies. Finally, technology companies are a magnet for professional talent because of their status and the high salaries they offer. This perspective of analysis of talent has also been considered in the technology sector (Foust-Cummings, Sabattini, & Carter, 2008) under the premise that, in these companies, maximizing talent regardless of gender can reduce gender barriers.

Against this backdrop, the goal of this study is to analyze female representation in the governance of large technology companies and its possible effects on the performance of these companies. Specifically, this study characterizes gender diversity in the senior management of large technology companies, also assessing how it has evolved over time, and explores the possible relationship between gender diversity and business performance. To the best of the authors' knowledge, this is the first study of gender for this sector. To conduct this study, the authors used Bloomberg L.P. (2018) to gather data on the gender diversity of the senior management of the 162 technology companies with the highest market capitalization worldwide as of February 15, 2018. The authors adopted Bloomberg L.P.'s (2018) classification of large companies by market capitalization. These data were supplemented with financial data gathered from the Osiris database (Bureau van Dijk, 2018). The data were gathered and analyzed for the period 2005 to 2017. After drawing the sample, the authors performed descriptive and numerical statistical analyses using measures such as the arithmetic mean, standard deviation, minimum, maximum, and percentiles. These results yield two principal findings. First, women are under-represented on the boards of directors of the analyzed companies. On average, women account for only 11.13% of board members. Second, the most profitable companies are those with the greatest gender diversity. The most significant differences in terms of profitability arise between companies that have no female board members and companies that have at least one female board member.

This chapter has five sections. Following this introduction, the second section reviews the gender literature that examines a range of facets of the role of women in corporate boards of directors. The third section describes the data sources that were used to gather the data for the empirical study and the method that was used to analyze these data. The fourth section presents the results of the analysis. The fifth section provides conclusions based on the study's findings.

THEORETICAL BACKGROUND

It may be hypothesized that gender diversity affects corporate governance and company performance. In the broadest sense, greater diversity in organizations, whether it is in terms of race, age, or gender, may lead to different perceptions of business performance and creativity. Similarly, more diverse groups of workers can arguably develop more innovative solutions to problems given the range of views that are elicited and discussed (Robinson & Dechant, 1997). However, this effect would contradict the hypothesis of equality. The hypothesis therefore requires thorough analysis.

In reference to corporate governance, Carter, Simkins and Simpson (2003) draw upon agency theory (Fama & Jensen, 1983) to argue that gender diversity increases the independence of the board of directors because people of different gender, ethnicity, or culture are able to question things that directors from a similar background would not. Other arguments provide several additional reasons why gender diversity is a determinant of the effectiveness of boards of directors (Adams & Ferreira, 2009). First, gender diversity allows the company to benefit from the greater stock of talent provided by its directors. Second, women's participation in the board of directors differs from that of men. For example, women contribute to improving attendance at meetings and are more likely to join monitoring committees. Har-

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joto, Laksmana and Lee (2015) argue that gender diversity increases the board's ability to recognize the needs and interests of different stakeholders, all of which affects corporate social responsibility because more diverse groups have different knowledge bases, experiences, and social perspectives. Nielsen and Huse (2010), however, note that the impact of women on the board's decision capabilities depends on the type of task, with a positive impact on strategic tasks. It is also important to consider not only women's presence on the board of directors but also the need for a critical mass of female board members. A minimum of three female directors is needed to enhance the contribution of the board of directors in terms of organizational innovation (Torchia, Calabró, & Huse, 2011).

A rich literature discusses the differences between men and women. These differences influence the behavior of the board of directors when it has female members. Notably, leadership style varies across genders (Nielsen & Huse, 2010), as reflected by the characteristics that are embodied more by men than by women (e.g., confidence, ambition, aggression, and independence) and the characteristics that are embodied more by women than by men (e.g., concern for the well-being of others, affection, helpfulness, and friendliness). There are also gender differences in terms of attitudes toward risk. Women are more risk-averse than men are (Bernasek & Shwiff, 2001). Finally, women behave differently from men with respect to debt: Women are less likely to seek external financing (Byoun, Chang, & Kim, 2016). Other such differences also exist.

After presenting these arguments, it is important to reflect on the empirical evidence regarding the influence of gender-diverse corporate governance on business performance. Findings in this area vary, with scholars reporting positive, negative, and neutral effects (Isidro & Sobral, 2015). Examples of studies that have failed to find a causal relationship between gender diversity in corporate governance and business performance include the study by Carter, D'Souza, Simkins and Simpson (2010). To explain their results, they note the likelihood that the increased company value due to gender diversity in the board of directors could be obscured by issues such as conflict or exclusion. They also argue that this relationship may be contingent. In other words, the relationship may depend on the circumstances and period under analysis. Similar results have since been reported by Yeh and Trejos (2015) and Marinova, Plantenga and Remery (2016).

Notable studies that have found a negative relationship include the study by Adams & Ferreira (2009), who report that more diverse boards are associated with more poorly performing companies in terms of *Tobin's Q ratio* and return on assets (*ROA*). They explain their findings by arguing that gender diversity only increases value when additional monitoring would increase company value. Gulamhussen and Santa (2015) report that the participation of women in boards of directors of large banks in OECD countries exerts a positive influence on profitability and a negative influence on risk.

Nevertheless, a greater number of studies have shown the existence of a positive relationship. Notable examples include Carter et al.'s (2003) study, which showed the positive influence of the presence of women or minorities on company value creation. Similar findings have been reported by Rodríguez-Domínguez, García-Sánchez and Gallego-Álvarez (2012) for companies in the energy and petrol sector, Liu, Wei and Xie (2014) for Chinese listed companies, García-Meca, García-Sánchez and Martínez-Ferrero (2015) for the banking sector, and Terjesen et al. (2016) for a sample of companies from 47 countries. Finally, Post and Byron (2015) conducted a meta-analysis of 140 studies of a range of contexts, finding evidence that female representation on boards of directors is important for increasing profitability.

In the technology sector, gender differences are gaping (Cohoon, 2011). Certain studies have corroborated these gender differences, particularly for the case of US technology companies (Ashcraft, Mclain, & Eger, 2016). These differences may owe to the traditionally lower enrolment rate of women

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in university STEM programs (Glass et al., 2013) or the lack of active gender policies among high-technology companies (Williams, 2014) or problems that women face in achieving promotions (Simard, Henderson, Gilmartin, Schiebinger, & Whitney, 2008). Thus, technology companies also seem to have a glass ceiling (Fernández & Campero, 2012).

METHOD AND DATA SOURCES

Description and Analysis of the Sample

To select the sample, the authors selected the largest publicly listed technology companies in the world in terms of market capitalization in USD over the full study period, subject to data availability. To select these companies, the classification provided by Bloomberg L.P. (2018) was used. This classification identifies small, medium-sized, and large enterprises according to their market value or capitalization. Restricting the selection to companies in the technology sector, the authors selected all large companies, as per the classification on Bloomberg L.P. (2018). The next step consisted of searching for and gathering all gender variables provided by Bloomberg L.P. (2018) for these companies. Of the 173 companies that were initially selected, gender data were available for 163 companies for the period 2005 to 2017.

Once these data had been collected, the authors supplemented the data with financial data gathered from the Osiris database (Bureau van Dijk, 2018). A series of measures were collected for this study. These measures correspond to some of the primary indicators used to explain company performance. These measures are also some of the most commonly used in studies of corporate governance. The activities of one of the sampled companies included financial activities, so the data format for this company differed from the format for all other companies in the sample. This discrepancy would have prevented data comparability across the sample. Therefore, this company was eliminated from the sample. The financial variables were expressed in different currencies depending on each company's country of origin. All values were therefore converted into USD. To convert the values to USD, for each year, the official exchange rate for each currency as reported by the World Bank (2018) was used.

This procedure yielded data on 162 companies. According to their classification in Bloomberg L.P. (2018), each company belonged to one of three industries: technology hardware and equipment (42 companies), software and services (91 companies), or semiconductors and semiconductor equipment (29 companies). This sample had several notable characteristics. First, the companies were based in 19 countries across America, Europe, and Asia-Pacific. Africa was the only continent that was not represented by the sample. Also, several companies were headquartered in Bermuda (three companies) or the Cayman Islands (seven companies) for tax reasons. Second, more than half of the companies in the sample (83 companies) were from the US. The countries with the second and third highest representation were Japan and China. Table 1 shows the number of companies by country and region, reflecting the hegemony of the US and Europe's low representation. At the time of analysis, 18 of the 162 analyzed companies had a market capitalization of more than 100 billion USD (14 of these were US companies), and 17 had a market capitalization of 50 to 100 billion USD.

The variables that were used in this study can be broadly classified in two categories: gender variables and financial variables. The variables can be described as follows:

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1. Gender variables gathered from Bloomberg L.P. (2018):
   a. **Wom_Board:** Number of women on the board of directors.
   b. **%Wom_Board:** Percentage of female board members.
   c. **Wom_Exe:** Number of women executives.
   d. **%Wom_Exe:** Percentage of female executives.
   e. **Wom_Chair:** Female president. Dichotomous variable that takes the value 1 if the president is a woman and 0 otherwise. The use of this variable and the following variable is important because there is evidence that the gender of the president and CEO affects the contribution of female directors to the decision-making process of the board of directors (Torchia et al., 2011).
   f. **Wom_CEO:** Female CEO. Dichotomous variable that takes the value 1 if the CEO is a woman and 0 otherwise.
   g. **Wom_Board_1:** Dichotomous variable that takes the value 1 if the board of directors has at least one member who is a woman and 0 otherwise.
2. Financial variables gathered from Bureau van Dijk (2018):
   a. **ROA (%):** Return on assets, calculated as the ratio of ordinary income before tax to total assets.
   b. **Tobin's Q ratio:** Calculated as the ratio of total market value to total asset book value.
   c. **ROE (%):** Return on equity, calculated as the ratio of ordinary income before tax to shareholders' equity.

These three variables were included in the analysis because they are some of the most commonly used business performance measures in studies of gender diversity in corporate governance (Adams & Ferreira, 2009; Isidro & Sobral, 2015; Rodríguez-Ruiz, Rodríguez-Duarte, & Gómez-Martínez, 2016). As reported by Carter et al. (2010), the *ROA* indicates the ability of the company to generate profit using its assets, valued at their historical cost. *Tobin's Q ratio* provides a measure of the wealth of shareholders and creditors. This indicator partly depends on the market value of the company. Therefore, its use in the study of listed companies is essential because it offers a market valuation of the investment opportunities provided by the company (Carter et al., 2010). The *ROE* indicates how well shareholders' equity is used to generate profit (Rodríguez-Ruiz et al., 2016).

Although these three variables are key variables in the literature, other measures are also useful for explaining a company's situation. Therefore, this study used three additional ratios (*Cash*, *Solv*, and *Gear*). The first variable, *Cash*, captures the cash flow of the company. The financial community considers cash flow the primary indicator of the financial health of the company (Llorente & Amador, 2010). Cash flow refers to the inflows and outflows of cash in the company's accounts. Because of the lag between income/expenses and receipts/payments, it is important to go beyond profit to study the company's ability to finance the business and meet short-term debt obligations.

- **Cash (thousand USD):** Cash flow.
- **Solv (%):** Solvency ratio, calculated as the ratio of shareholders' equity to total assets.
- **Gear (%):** Gearing ratio, calculated as the ratio of noncurrent liabilities and loans to shareholders' equity.

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Table 1. Distribution of companies in the sample by country and region

America		Europe		Asia-Pacific	
Bermuda	3	Germany	4	China	9
Brazil	1	Spain	1	South Korea	7
Canada	3	Finland	1	India	4
Cayman Islands	7	France	3	Israel	1
US	83	Ireland	2	Japan	20
		Netherlands	3	Taiwan	5
		United Kingdom	2		
		Sweden	1		
		Switzerland	2		
Total	97		19		46
Percentage	60%		12%		28%

Source: Compiled by the authors using information from Bureau van Dijk (2018)

One of the pillars of business risk is financial risk, which is closely linked to the company's ability to generate liquid assets (Llorente & Amador, 2010). It is therefore important to analyze the company's solvency, which offers a measure of the stability of the company and its ability to meet its short- and long-term obligations. Therefore, to provide an overview of each company's solvency, the proportion of assets that are financed by shareholders' equity (*Solv*) was included in the study. An indicator of the company's leverage (*Gear*) was also used. This indicator was included not only because of the importance of debt as a determinant of business performance (Pamburai, Chamisa, Abdulla, & Smith, 2015) but also because of the notable differences between men and women in terms of their attitudes toward risk (Bernasek & Shwiff, 2001) and company debt (Hernández-Nicolás, Martín-Ugedo, & Mínguez-Vera, 2015). The gearing ratio is the ratio of the company's most important sources of external financing, such as long-term liabilities and short-term loans, to shareholders' equity.

Finally, the following four variables, some of which have frequently been used in the corporate governance literature, were included in the analysis to provide an indication of the size and characteristics of the firms in the sample:

- **Board:** Number of members of the board of directors.
- **Tot_Ass (thousand USD):** Total assets.
- **Sls (thousand USD):** Sales.
- **R&D (thousand USD):** R&D spending.

Method

This study is based on descriptive and numerical statistical analysis whose goal is to process and extract useful information from the data (Newbold, Carlson, & Thorne, 2007). To conduct the analysis, several types of measures were used: measures of central tendency, measures of variability, minimum and maximum values, and percentiles. For the measures of central tendency, the arithmetic mean was used. The arithmetic mean provides numerical information about a standard observation. A measure of

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variability (i.e., the standard deviation) was used to measure the dispersion of observations around the arithmetic mean. The goal of this measure was to complement the description provided by the mean.

These measures were used provide an overview of the primary characteristics of large technology firms in terms of gender diversity in the senior management and business performance. The purpose was also to explore the relationship between the two variables, thereby addressing the research goal. First, the mean, standard deviation, minimum, maximum, and percentiles were calculated for the sample (Table 2) and for each industry within the sample (Table 3). The next step was to provide a more exhaustive description of female representation in the senior management of the analyzed companies over the last three years (Table 4). This period was used not only because it depicts the current situation but also because data were available for all companies for these years. Finally, Table 5 shows the arithmetic means of the financial variables for samples under different gender-based criteria. The goal was to identify possible relationships between these variables and gender characteristics.

RESULTS OF THE ANALYSIS

The results of the analysis described in the previous section are presented in this section, accompanied by a brief discussion.

Table 2 shows the values for the aforementioned statistics for the whole sample. The data in Table 2 show that women are substantially under-represented on the boards of directors of the sampled companies. On average, the boards of directors have just one member who is a woman (1.1327), yet the average number of members per board is approximately 10 (9.5890). Similarly, the average percentage of women on these boards of directors is only 11.13%. For 75% of the observations for this indicator, the percentage of female board members is less than 18.18%. The highest number of female members on any board of directors is 6, while the largest board has 27 members. The average percentage of female executives to total executives at the company is also very low (9.59%).

Analysis of the financial data shows that, on average, the sampled firms have a *ROA* of 9.67%. For 75% of the observations for this indicator, the *ROA* is less than 16%. On average, the market value of the sampled firms is more than twice the historical cost of total assets (*Tobin's Q ratio* = 2.21). The average *ROE* is 18.33%, although the highest *ROE* is 631.18%. In general, cash flow is positive and is greater than 92.389 million USD. On average, 53.12% of the assets are financed by shareholders' equity. On average, noncurrent liabilities and financial debt account for around 70% of shareholders' equity. Average total assets are 14.10 billion USD, with high dispersion, reflecting a high degree of heterogeneity. Average sales are 9.94 billion USD. Finally, the majority of firms invest more than 48.22 million USD in R&D.

Table 3 complements this analysis by showing the statistics for each industry. The gender indicators show that, although women are under-represented on the boards of directors of companies in all three industries, the technology hardware and equipment industry presents the worst data. On average, only 8.76% of the board members of companies in this industry are women. This percentage is slightly higher for the semiconductors and semiconductor equipment industry (10.67%). The best data are for the software and services industry (12.53%). Similarly, the companies in the software and services industry also have the highest proportion of female executives (11.67%) and the best financial performance in terms of *ROA* (average of 10.66% versus 8.63% for the technology hardware and equipment industry and 8.28% for the semiconductors and semiconductor equipment industry), *Tobin's Q ratio* (average of 2.68 versus 1.89 for the semiconductors and semiconductor equipment industry and 1.56 for the technol-

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ogy hardware and equipment industry), and *ROE* (average of 22.32% versus 15.37% for the technology hardware and equipment industry and 11.04% for the semiconductors and semiconductor equipment industry). Differences also arise for leverage (*Gear*), not only in terms of average values for the gearing ratio (software and services: 81.85%; semiconductors and semiconductor equipment: 61.31%; technology hardware and equipment: 55.18%) but also in terms of the percentiles and maximum values. In all cases, the software and services industry had the highest values.

Table 2. Descriptive statistics for the sample (162 companies)

Variables	Obs	Arithmetic Mean	Standard Deviation	Minimum	Maximum	25th percentile	50th percentile	75th percentile
Wom_Board	1017	1.1327	1.2106	0	6	0	1	2
%Wom_Board	1569	11.1318	10.7495	0	100	0	10	18.18
Wom_Exe	1254	1.0685	3.0059	0	47	0	1	1
%Wom_Exe	1254	9.5992	12.2184	0	80	0	4.44	16.66
Wom_Chair	1426	0.0147	0.1204	0	1	0	0	0
Wom_CEO	1441	0.0194	0.1380	0	1	0	0	0
Wom_Board_1	1181	0.6680	0.4711	0	1	0	1	1
ROA	1837	9.6742	12.5494	-96.92	97.36	4	10	16
Tobin's Q ratio	1614	2.2180	2.0992	0.012	24.295	1	2	3
ROE	1790	18.3394	50.4252	-866.31	631.48	9	18	29
Cash	1854	1692157	4331432	-3779252	63900000	92389	509457.5	1409849
Solv	1835	53.1297	22.97137	-55	96	39	55	71
Gear	1307	69.5550	94.2873	0	913	17	44	86
Board	1577	9.5890	2.636831	3	27	8	9	11
Tot_Ass	1839	14100000	30400000	114	375000000	1325981	4828337	13200000
Sls	1870	9939253	24800000	1	272000000	680578	2822593	8278141
R&D	1507	892246.4	1745702	0	16600000	48224	303200	894856

Source: Compiled by the authors using outputs from Stata 11. Obs (observations).

Table 3. Descriptive statistics by industry

Variables	Obs	Arithmetic Mean	Standard Deviation	Minimum	Maximum	25th percentile	50th percentile	75th percentile
Technology Hardware and Equipment (42 Companies)								
Wom_Board	224	0.9553	1.2045	0	5	0	1	2
%Wom_Board	424	8.7606	11.4413	0	100	0	7.14	14.29
Wom_Exe	347	1.6051	5.4345	0	47	0	1	1
%Wom_Exe	347	7.4412	10.7674	0	50	0	1.408	11.111
Wom_Chair	389	0.0179	0.1331	0	1	0	0	0
Wom_CEO	394	0.0279	0.1649	0	1	0	0	0

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Table 3. Continued

Variables	Obs	Arithmetic Mean	Standard Deviation	Minimum	Maximum	25th percentile	50th percentile	75th percentile
Wom_Board_1	260	0.5807	0.4943	0	1	0	1	1
ROA	485	8.6371	10.6251	-61	45	4	9	13
Tobin's Q ratio	430	1.5627	1.3325	0	10	1	1	2
ROE	472	15.375	38.7205	-678	185	8	16	24
Cash	486	2583686	6639082	-2245939	63900000	16192	511173.5	2425000
Solv	484	53.9524	21.3584	-21	96	41	55	69
Gear	424	55.1816	66.5332	0	542	15	35.5	74
Semiconductors and Semiconductor Equipment (29 Companies)								
Wom_Board	193	1.1761	1.3189	0	6	0	1	2
%Wom_Board	322	10.6796	10.8636	0	44.444	0	10	16.67
Wom_Exe	238	0.5882	0.9494	0	5	0	1	1
%Wom_Exe	238	6.9168	10.3276	0	40	0	0	14.286
Wom_Chair	284	0.0070	0.0837	0	1	0	0	0
Wom_CEO	284	0.0140	0.1180	0	1	0	0	0
Wom_Board_1	232	0.6896	0.4636	0	1	0	0	1
ROA	351	8.2877	12.6705	-97	38	3	10	15
Tobin's Q ratio	327	1.8929	1.7525	0	24	1	2	2
ROE	342	11.0438	34.7574	-253	125	5	16	24
Cash	351	1411319	2268680	-3779252	17200000	266710	771290	1579908
Solv	350	60.12	22.2815	-55	92	48	63	77
Gear	232	61.3146	91.378	0	811	12.5	35.5	76.5
Software and Services (91 Companies)								
Wom_Board	600	1.185	1.1717	0	6	0	1	2
%Wom_Board	823	12.53028	10.1010	0	45.454	0	11.111	20
Wom_Exe	669	0.961136	1.0432	0	5	0	1	2
%Wom_Exe	669	11.67277	13.1472	0	80	0	11.111	20
Wom_Chair	753	0.0159363	0.1253	0	1	0	0	0
Wom_CEO	763	0.017038	0.1294	0	1	0	0	0
Wom_Board_1	689	0.6937591	0.4612	0	1	0	1	1
ROA	1001	10.6603	13.3007	-96	97	5	10	17
Tobin's Q ratio	857	2.6849	2.4425	0	24	1	2	3
ROE	976	22.3288	58.9778	-866	631	11	20	34
Cash	1017	1363043	3299609	-3383778	30000000	103505	412015	1187786
Solv	1001	50.2867	23.4215	-51	96	35	51	69
Gear	651	81.8556	108.187	0	913	21	52	101

Source: Compiled by the authors using outputs from Stata 11. Obs (observations).

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Table 4 provides a more complete picture of female representation on the boards of the sampled companies. Table 4 shows the number of companies that meet certain criteria in relation to the gender variables at the sector and industry levels for the period 2005 to 2017. To ensure clarity, an explanation of each of these criteria is provided as the corresponding results are presented. First, the number of companies whose boards of directors had no female members reduced year on year (see Criterion 1). Specifically, in 2015, 52% of the companies in the sample (84 companies) had at least one female member on the board of directors (versus 48% of companies with boards of directors formed entirely of men). In 2017, this percentage had increased to 76% (123 companies). Although the number of companies with at least one female board member increased year on year in all industries, there were considerable differences across different industries. Specifically, the largest increase over the period occurred in the software and services industry, where the percentage increased by 29 percentage points. Thus, in 2017, 85% of software and services companies had at least one female board member. In the semiconductors and semiconductor equipment industry the percentage increased by 24 percentage points to 79%. The technology hardware and equipment industry lagged behind, with an increased from 40% in 2015 to 55% in 2017.

Criteria 2 and 3 refer to the number of companies with at least two or three female board members, respectively. The results show a sharp drop in practically all cases with respect to Criterion 1. The largest drop is in the semiconductors and semiconductor equipment industry. In general, these drops grew year on year in terms of both the difference between the number of companies that met Criteria 1 and 2 and the difference between the number of companies that met Criteria 2 and 3. This result reflects the fact that, in virtually no case (across the sample as a whole or in each separate industry), the number of companies with at least two female board members exceeds 50%. The exception is the software and services industry for the year 2017 (53%). This is also the only industry for which, also for 2017, the percentage of companies with at least three female board members is greater than 30%.

These conclusions are particularly relevant given that the average number of members on the board of directors of the sampled firms is approximately 10 and that for 75% of the observations for this indicator, the number of board members is at least 8 (see Table 2; arithmetic mean and 25th percentile of the measure *Board*). Therefore, although a high proportion of the boards of the sampled companies have at least eight members, the number of companies with at least three female board members was just 25 in 2015 (15%), 37 in 2016 (23%), and 39 in 2017 (24%). These findings are supported by Criteria 6, 7, and 8, which relate to the number of companies with a proportion of female board members that is greater than the sample mean, 25th percentile, and median, respectively. Thus, the results show that, in general, more than half of the companies across the sample and in each separate industry have a percentage of female board members that is greater than the mean. In very few companies, however, do women account for at least 25% of all board members (22% of companies in 2015 and 28% of companies in 2016 and 2017). In even fewer companies do women account for at least 50% of the board members (only 4% of companies in 2015 and virtually the same percentage in 2016 and 2017).

Finally, Criteria 4 and 5 refer to the number of companies where the president and the CEO, respectively, are women. The data are more stable for these criteria than for any other criteria. Only minor changes are observed over time, and very few companies meet these criteria. Specifically, in 2017, in only 4 out of the 162 analyzed companies (2%) was the president a woman. Two of these companies are from the technology hardware and equipment industry and two are from the software and services industry. In 2017, only 5 out of the 162 sampled companies (3%) had female CEOs.

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Table 4. Number and proportion of companies by criterion (2015–2017)

Criteria	162 companies	Technology hardware and equipment (42 companies)	Semiconductors and semiconductor equipment (29 companies)	Software and services (91 companies)
2015				
(1) Wom_Board >= 1	84 (52%)	17 (40%)	16 (55%)	51 (56%)
(2) Wom_Board >= 2	56 (35%)	14 (33%)	9 (31%)	33 (36%)
(3) Wom_Board >= 3	25 (15%)	7 (17%)	2 (7%)	16 (18%)
(4) Wom_Chair =1	3 (2%)	2 (5%)	1 (3%)	0
(5) Wom_CEO =1	6 (4%)	3 (7%)	1 (3%)	2 (2%)
(6) %Wom_Board >= Mean	94 (58%)	23 (55%)	19 (66%)	49 (54%)
(7) %Wom_Board >= 25%	35 (22%)	10 (24%)	4 (14%)	21 (23%)
(8) %Wom_Board >= 50%	7 (4%)	1 (2%)	0	6 (7%)
2016				
(1) Wom_Board >= 1	112 (69%)	24 (57%)	20 (69%)	68 (75%)
(2) Wom_Board >= 2	71 (44%)	15 (36%)	12 (41%)	44 (48%)
(3) Wom_Board >= 3	37 (23%)	7 (17%)	5 (17%)	25 (27%)
(4) Wom_Chair =1	4 (2%)	2 (5%)	0	2 (2%)
(5) Wom_CEO =1	5 (3%)	2 (5%)	1 (3%)	2 (2%)
(6) %Wom_Board >= Mean	85 (52%)	23 (55%)	17 (59%)	51 (56%)
(7) %Wom_Board >= 25%	46 (28%)	10 (24%)	6 (21%)	30 (33%)
(8) %Wom_Board >= 50%	6 (4%)	1 (2%)	0	5 (5%)
2017				
(1) Wom_Board >= 1	123 (76%)	23 (55%)	23 (79%)	77 (85%)
(2) Wom_Board >= 2	77 (48%)	16 (38%)	13 (45%)	48 (53%)
(3) Wom_Board >= 3	39 (24%)	7 (17%)	4 (14%)	28 (31%)
(4) Wom_Chair =1	4 (2%)	2 (5%)	0	2 (2%)
(5) Wom_CEO =1	5 (3%)	2 (5%)	1 (3%)	2 (2%)
(6) %Wom_Board >= Mean	85 (52%)	23 (55%)	18 (62%)	51 (56%)
(7) %Wom_Board >= 25%	45 (28%)	10 (24%)	5 (17%)	30 (33%)
(8) %Wom_Board >= 50%	6 (4%)	1 (2%)	0	5 (5%)

Source: Compiled by the authors using outputs from Stata 11. For Criterion 6, the values for a given industry were calculated using the arithmetic mean for that industry.

Next, the data in Table 5 were used to examine the possible relationship between female representation in the senior management of the sampled companies and the performance of these companies. Table 5 shows the mean of each financial variable calculated for different gender-based criteria. For Criteria 1 through 4, the data show that as the minimum number of female board members increases, so does the average profitability of the firms (in terms of both *ROA* and *ROE*) and the market value (*Tobin's Q ratio*). This finding reflects the need to reach a critical mass of female board members so that their contribution becomes apparent. The reason is that majorities exert a greater influence than minorities,

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which are more easily marginalized (Torchia et al., 2011). Notably, the largest increase in these measures occurs in cases where the composition of the board changes from consisting solely of men to including at least one female member (i.e., from Criterion 1 to Criterion 2).

Table 5. Arithmetic mean of financial variables by gender-based criterion

Criteria	*ROA*	*Tobin's Q ratio*	*ROE*	*Cash*	*Solv*	*Gear*
(1)Wom_Board = 0	6.2090	2.1465	8.4581	919266.3	54.5884	76.4190
(2)Wom_Board >= 1	10.3787	2.2416	20.3205	1854605	52.8313	68.2424
(3)Wom_Board >= 2	10.9324	2.2693	20.7440	1943327	54.4431	60.9365
(4)Wom_Board >= 3	11.2140	2.2321	20.3336	1723444	56.1857	57.517
(5)%Wom_Board < Mean	9.2742	2.0099	17.0364	1548598	55.4090	69.4424
(6)%Wom_Board >= Mean	10.0214	2.4416	19.5197	1815558	51.1269	69.6692
(7)Wom_Chair =0	10.0146	2.1714	20.2591	2048004	53.59059	68.1869
(8)Wom_Chair =1	12.6	1.8421	48.33333	107935.2	31.4	243
(9)Wom_CEO =0	10.24693	2.1767	20.7305	2039595	53.8751	67.8006
(10)Wom_CEO =1	6.538462	1.92	21.28	1550279	33.4615	208.4444

Source: Compiled by the authors using outputs from Stata 11.

The remaining means also indicate the existence of a positive association between the presence of women in the company's senior management and the generation of positive cash flows. This finding is implied by the variation in the average of the cash flow measure (*Cash*), which is more than twice as large in companies that have at least one female board member than in companies whose boards of directors comprise only men. Although the mean solvency indicator (*Solv*) is lower for Criterion 2 than for Criterion 1, it increases as the minimum number of women on the board of directors increases from one to three. Notably, the mean leverage ratio (*Gear*) decreases when there is at least one woman on the board of directors (from 76.41% to 68.24%). This ratio continues to decrease, albeit to a lesser degree, when the minimum number of female board members increases from two to three.

Similarly, Criteria 5 and 6 also reveal differences in the averages of practically all financial indicators. Specifically, Criteria 5 and 6 refer to companies for which the percentage of female board members is less than the sample mean (Criterion 5) and companies for which the percentage of female board members is greater than or equal to the mean (Criterion 6). The results highlight notable differences between the companies in each of the two cases. Companies for which the percentage of female board members is greater than or equal to the sample mean are more profitable (in terms of *ROA* and *ROE*), have higher values for *Tobin's Q ratio*, and generate greater positive cash flows.

The remaining criteria reveal considerable differences between companies depending on whether the president is male or female (Criteria 7 and 8, respectively) and between companies depending on whether the CEO is male or female (Criteria 9 and 10, respectively). On average, the most profitable companies have a female president. This is particularly true in the case of the *ROE*, which is more than twice the *ROE* for companies with a male president. Companies whose president or CEO is male have higher market values and generate greater positive cash flows. If the president or CEO is a woman, the

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company has a lower percentage of assets that are financed by shareholders' equity and, therefore, greater leverage. Both of these variations are substantial.

The findings presented herein show the clear gender differences in the corporate governance of leading technology companies, based on inadequate female representation. On average, women account for 11.13% of board members. Although the number of companies with at least one female board member has an increasing trend, the number of companies that have at least two or three female board members is substantially lower, particularly considering that the average number of board members is approximately 10.

It is also noteworthy that the gender data vary by industry. Software and services has made the best progress in terms of female representation in the senior management. These findings are particularly important given that the data highlight the differences in the performance of companies depending on the female representation on the corporate board. Companies with female board members are more profitable than companies whose boards of directors comprise only men. These findings are consistent with most of the related literature, which emphasizes the need to have women on the board of directors to improve company performance (Carter et al., 2003; Liu et al., 2014; Post & Byron, 2015; Terjesen et al., 2016).

CONCLUSION

The importance of encouraging gender-diverse boards of directors is supported by numerous arguments and studies. Much has yet to be done, however, not only because of the conflicting findings regarding the potential influence of gender diversity on company performance, but also because certain types of companies have received less attention and because the literature contains few sector analyses. Studies of gender in relation to the digital economy sector are scarce, despite the major impact of this sector on the economy and society and despite its unique characteristics, which make analyzing female representation in senior management positions in this sector particularly interesting. In response, this study's goal was to provide a characterization of gender diversity in corporate governance and examine its potential effects on several financial variables. To achieve this goal, descriptive statistical analysis of the 162 largest technology companies in the world in terms of market capitalization was conducted for the period 2005 to 2017.

The primary conclusions, which are based on the results of the analysis, allude to scarce female representation on the board of directors and in the senior management. Second, the software and services industry has the fewest companies with no female board members. Companies in this sector have made the most progress in recent years in terms of female representation on the board of directors.

A notable finding is that the most profitable companies are those with female board members and female presidents. This finding reflects the sizeable task faced by the sampled firms to achieve gender equality in their senior management. This conclusion also applies to numerous other areas and represents an ethical, social, and economic challenge for institutions and society as a whole.

Finally, this study has certain limitations. These limitations fundamentally relate to the fact that the study presents an initial descriptive analysis and does not explore causal relationships between variables using sound econometric methods. This study could be extended by applying more rigorous analyses and by broadening the scope to other samples of interest.

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KEY TERMS AND DEFINITIONS

Business Performance: A wide range of indicators that can focus on profitability, growth, or social performance of companies.

Gender Diversity: Usually measurable by the proportions of male and female in companies or institutions. In this work, gender diversity focuses on the percentage and number of women on boards of big technological companies. In the broadest sense, diversity in organizations can be in terms of race, age, or gender.

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ROA: Return on assets, calculated as the ratio of ordinary income before tax to total assets.

ROE: Return on equity, calculated as the ratio of ordinary income before tax to shareholders' equity.

Solvency Ratio: Calculated as the ratio of shareholders' equity to total assets.

Technology Companies: Those who are focused on products and services with a main technological component.

Tobin's Q Ratio: Calculated as the ratio of total market value to total asset book value.

ENDNOTE

[1] In this work the concept of gender is used in its differentiating aspect between women and men, following the approach of most of the specialized literature.

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Chapter 98
Does a Federal Glass Ceiling Have Differential Effects on Female and Male Technology Entrepreneurs?

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ABSTRACT

Glass ceilings are invisible organizational barriers encountered by underrepresented groups in large hierarchies. This chapter empirically investigates the existence and characteristics of an internal, government-wide glass ceiling for female employees using aggregate pay grade and demographic data on nearly 1.5 million U.S. Federal employees between 2001-2011. The external consequences for over 15,000 technology ventures seeking R&D funding from 12 federal agencies is explored. In this context, the researchers analyze over 50,000 grants and find that a unit increase in a novel, government-wide, glass ceiling measure is a meaningful and negative predictor of subsequent Phase II funding outcomes for Phase I grantees. More importantly, the negative external effects of the identified glass ceilings are significantly larger for women technology entrepreneurs when compared to their male counterparts.

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INTRODUCTION

The term "glass ceiling" entered the corporate conversation in 1986 when Hymowitz and Schellhardt first coined the expression in the *Wall Street Journal.*[1] The concept continues to gain currency among scholars and is emerging as a core topic in the management literature (e.g., Adams & Funk, 2012; Akande, 2013; Glass & Cook, 2016). Glass ceilings are defined as invisible organizational phenomena in which overt and subtle barriers to managerial advancement exist for women (Ragins, Townsend, & Mattis, 1998). As described in the quote below from Robert B. Reich, U.S. Secretary of Labor, and Chairman of the Federal Glass Ceiling Commission, glass ceilings are perceived to exist and persist in management leadership hierarchies:

"The research [conversation] indicates that where there are women and minorities in high places, their compensation is lower … Nor does the evidence indicate that the glass ceiling is a temporary phenomenon. In fact, the research cited [in the Federal Glass Ceiling Commission Report] finds relatively few women and minorities in the positions most likely to lead to the top—the "pipeline" … In short, the fact-finding report tells us that the world at the top of the corporate hierarchy does not yet look anything like America." --- Glass Ceiling Commission Final Report (1995)

Since publication of this landmark report in 1995, a number of research studies support its basic claims. White males have been found to most likely achieve higher pay and increased promotion opportunities (Judge, Cable, Boudreau, & Bretz, 1995), women are more likely to experience greater challenges when promoted to CEO and then are allowed less room for error when in place as compared to males (Cook & Glass, 2014), and women appear to have less authority than men in the workplace. For cases where women do have authority, it is more likely to be at lower levels and more often than not, it is in the supervision of other women or minorities (Smith, 2002). Research on ethnic minority glass ceilings as the focus are rare. At the beginning, literature on glass ceilings pertained to just gender, but fairly quickly ethnic minorities have been grouped together in the diversity research conversation. The majority of studies do confirm that glass ceilings still exist for minorities, and that stereotyping, biases, and subtle racism still stand as barriers to removal (Wilson, 2014).

Prior research on glass ceilings primarily deal with identification of the phenomenon by considering differences in salary or management level between women and men with similar qualifications. This is extremely useful in measuring progress made in the commitment to improving diversity and equality in the workplace. However, a societal and institutional commitment to change does not necessarily translate into substantial and visible organizational change. According to the *Women in the Workplace 2016* Report produced by LeanIn.Org and McKinsey & Co., the percentage of women in the corporate pipeline shows a modest increase since 2015, but the results also indicate that at every level in the corporate hierarchy, women remain largely underrepresented.[2] While the authors acknowledge that identifying glass ceilings is the first critical step in making progress towards removing these barriers, if scholarly inquiry is limited to the problem of identification, then the results are also limited in ability to recommend strategy shifts and policy changes relevant to improving firm performance, economic, and societal outcomes.

A related emerging stream of research tackles this challenge by taking a functional perspective on the relationship between status and performance. For example, recent work finds that gaps in power such as glass ceilings may persist because women and minority corporate executives are discouraged from performing diversity-valuing behavior (e.g., outreach, training, etc. of minorities and women) (Hekman,

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Johnson, Foo, & Yang, 2017). This is corroborated in internal studies conducted by Federal agencies. For instance, the National Institutes of Health (NIH), find that insufficient outreach exacerbates the problem of lower rates of participation of women and minorities in science, technology, engineering, and mathematics (STEM) fields and may explain the lack of research and development (R&D) grant applications from minority-owned (3%) and woman-owned (13%) firms (Gansler & Shivakumar, 2016).

A lack of grant applications leads to a lack of grant funding for R&D which is critical to the commercial success of small technology firms. Many of these firms lack the funding to bridge the technology "valley of death" between proof-of-concept and generation of sales[3]. What happens for many technology firms is that they may be able to produce a minimum viable product or technology, but they do not have the capital required to bring that concept to market. This step is often capital intensive as "bugs" need to be worked out in software or actual products need to be manufactured and held in inventory prior to securing any sales. The purpose of R&D grant funding is to help these firms bridge the gap in capital and survive long enough in operations to generate sales on their own. Without these grants, many large technology firms (i.e., Qualcomm Inc., 23andme, Symantec Corporation, etc.[4]) would likely not exist today because these firms took advantage of grant funding when they were considered small technology businesses.

In FY 2015, over $421 million in new R&D funding was provided to small technology firms in the U.S. Of that, approximately $61 million (or 14%) went to women-owned small businesses and $26 million (or 6%) went to small disadvantaged businesses many of which are minority-owned. These figures are only this high due to notable outreach efforts by all participating Federal agencies which explicitly must demonstrate how they pursue an SBIR goal to "foster and encourage participation in innovation and entrepreneurship by women and socially or economically disadvantaged persons."[5] In spite of these outreach efforts, there is still the general lack of parity between male versus female and minority versus non-minority R&D grantees. Given this disparity, the gender and minority gap will only continue to sustain itself for the foreseeable future; therefore, diversity research must go further than simply acknowledging that glass ceilings exist and determine the societal and economic impacts of existing concerns.

This study contributes to and extends this line of research by introducing a novel proxy for the measurement of a glass ceiling across Federal agencies using the difference between the weighted average composite of the pay grades for male and female Federal employees. The researchers demonstrate how variation in the size of the Federal agency glass ceiling relates to the performance of private technology ventures pursuing Federal R&D funding. The authors specifically seek to answer the research question posed by the title of the study, *Does a Federal Glass Ceiling Have Differential Effects on Female and Male Technology Entrepreneurs?*

SBIR and STTR Programs

The Small Business Innovation Research program (SBIR) is a public R&D funding program which connects small private technology firms with Federal agencies. The SBA oversees the implementation of SBIR for all participating agencies and the program is structured into three phases.[6] The objective in Phase I is to establish the technical merit, feasibility, and commercial potential of the R&D and to determine the quality of performance of the small business. The purpose of the Phase II award is to further develop the R&D efforts from Phase I and to ideally end up with a commercial product, service or process. Phase III is not funded by SBIR, but Federal agencies may use other funds to assist in commercialization of R&D results from Phases I and II, if the government intends to purchase the product.[7]

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The Small Business Technology Transfer program (STTR) is largely modeled after the SBIR program with a few noteworthy distinctions. For instance, although the defined mission of the STTR program is identical to the SBIR program, the stated goals are somewhat different. While both programs aim to "Stimulate technological innovation as their top priority," STTR also seeks to "Foster technology transfer through cooperative R&D between small businesses and research institutions" as its next highest priority.[8] To meet this requirement, the small business must establish a formal intellectual property agreement with a partnering research institution during the first two phases of funding. This enables two-way knowledge transfer, with the research institution providing technological expertise and the firm providing commercialization expertise. The anticipated culmination of this knowledge sharing is increased technological innovation derived from Federal R&D funds. The small business firm eligibility requirements and three-phase program structure of the STTR program are similar to the SBIR program.[9]

Hypotheses

The negative effects of glass ceilings on women have been demonstrated in a variety of contexts (Cook & Glass, 2014; Hekman et al., 2017; Judge et al., 1995). However, there is ample reason to believe that these negative effects are not strictly limited to women. Research finds that underrepresented groups like minorities must also overcome systematic hurdles to secure public R&D funding and that factors such as workforce diversity of the grantor agency can help to mitigate these influences (Joshi, Inouye, & Robinson, 2017). Other studies find that employment for minorities and women is concentrated at the lower levels (Daley, 1996) and that white males experience a double advantage in the workplace with regards to having two socially desirable statuses when compared to those who belong to an ethnic minority or a different gender (Browne, Tigges, & Press, 2001). Therefore, it is expected that underrepresented groups such as women-owned or minority-owned small businesses will be affected in a similar manner. As a result, the authors hypothesize the following:

H1a – The size of the gender pay gap is negatively related to the likelihood of follow-on Phase II R&D funding for female-owned, SBIR/STTR Phase I grantees.

H1b – The size of the gender pay gap is negatively related to the likelihood of follow-on Phase II R&D funding for minority-owned, SBIR/STTR Phase I grantees.

The availability of funds is directly related to the likelihood of securing follow-on funding. Federal agency employees who make the decision of whether to fund a grant proposal are in a position which is affected by an effort-risk tradeoff. Research finds that budget levels and effort are positively related until the point where staying within budget becomes too difficult at which point individuals "play it safe" and avoid or sacrifice the potential for reward (a commercialized product) in order to stay within budget (Sprinkle, Williamson, & Upton, 2008). Therefore, it is expected that larger available agency budgets will result in a higher likelihood of Phase I grantees securing follow-on Phase II funding.

In 1963, John F. Kennedy had a famous saying, "a rising tide lifts all boats." This refers to the concept that improvement in the general economy will benefit all participants within it. This concept is generally supported in the research community (Hines Jr, Hoynes, & Krueger, 2001) as a valid perspective in governmental macroeconomic policy. The SBIR program is tied to this. Individual Federal agencies (which have extramural R&D budgets larger than $100 million) are in fact mandated to use 3.2% (in FY 2017) of their R&D budget to fund SBIR programs[10]. SBIR ties the program to the private sector

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and policy forces Federal employees in these agencies to solicit and potentially fund several types of small business concerns (women-owned, minority-owned, etc.). According to SBIR policy, agencies with larger extramural R&D budgets (like the Department of Defense at $71.8B[11]) are forced to allocate larger budgets to funding SBIR/STTR grants than others. These agencies fund more grants and if John F. Kennedy's macroeconomic perspective continues to hold, all types of Phase I grantees are expected to benefit. Therefore, we propose the following hypothesis:

H2 – A larger amount of available funds at the Federal agency level is positively related to a higher likelihood of follow-on Phase II R&D funding for all types of Phase I grantees.

While a larger available budget is predicted to increase the likelihood of follow-on Phase II funding for all groups of grantees, it does not mean that all groups are expected to increase the same amount. The glass ceiling literature often refers to situations where individuals who are more like those at the top of organizations often get selected for mentorship or other opportunities because of those traits. This is referred to as homophily. White men have long been at the top of the management hierarchy and homophily has been found to play a role in creating and maintaining glass ceilings (Purcell, MacArthur, & Samblanet, 2010). If it is assumed that glass ceilings still exist in the Federal government, then prior research indicates that homophily may lead males in decision-making positions to fund business owners who are more similar to them. Therefore, we propose the following hypothesis:

H3 – Male-owned small business grantees will have a higher likelihood of follow-on Phase II R&D funding than for female-owned small business grantees when more funds are available at the Federal agency level.

METHODS AND DATA

The researchers empirically investigate the existence and characteristics of an internal U.S. government-wide glass ceiling for female employees using aggregate pay grade and demographic data on nearly 1.5 million U.S. Federal employees between 2001-2011. Then the external consequences for technology ventures seeking R&D funding from 12 Federal agencies which participate in the Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs is explored.

Data Sources and Collection

The analysis utilizes variables constructed from three nationwide online databases provided by the Small Business Administration (SBA)[12] and a fourth government-wide online database provided by the Federal Office of Personnel Management (OPM).[13] An initial sample of 69,771 SBIR/STTR awards (52,286 Phase I and 17,485 Phase II) granted to 14,658 unique firms between 2001-2011 is extracted.

Note that the comprehensive nationwide initial sample represents 69,771 out of 157,528 total awards or 44% of all Federal small business research grants awarded and includes 15,520 out of 28,164 or about 52% of all firms that participated in the SBIR and/or STTR program since inception. After an extensive database validation and cross-checking process as detailed in Appendix Table 1, 160 awards (0.3% of Phase I) are excluded from the sample due to missing or incomplete records. The described process in

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Appendix Table 1 is modeled from prior research using Federal R&D grants (Joshi et al., 2017), and the resulting sample of 52,126 Phase I awards is incorporated into the regression analyses.

Variables

Dependent Variable: The unit of analysis is the award. The dependent variable TRANSITION equals 0 if there is no subsequent Phase II award granted for the original focal SBIR or STTR Phase I award, and equals 1 if there is a subsequent Phase II award granted.

Explanatory Variables: Explanatory variables are defined at the government, agency, and firm levels. At the government-level, GLASS_CEILING is computed as the difference between the weighted average composite of the pay grades for male and female Federal employees. This data comes from the aggregate records of salary information for approximately 1.5 million Federal employees compiled by the U.S. Office of Personnel Management (OPM) and the U.S. Equal Employment Opportunity Commission (EEOC). The Federal government defines a standardized pay scale or General Schedule (GS) for Executive Branch civil service employees. The GS is classified into 15 grades, from GS-1 (the lowest) to GS-15 (the highest). Within each grade, there are 10 steps. Except for the Senior Executive Service, most positions within Federal agencies are associated with a GS level, which is used to establish the salary for a particular position. Thus, the widespread use of the standardized pay scale across the U.S. Federal government when linked with demographic data on Federal employees enables the researchers to quantify the average pay grades of male employees in comparison to female employees. This also enables the quantification of pay grades of non-minority employees in comparison to minority employees.

As shown in Figure 1, and indicated by the blue dots, GSDELTA_GENDER or difference in the weighted average composite pay grades for men and women is nearly 2 GS levels in 2000, decreasing to about 1 GS level by 2013. The government-wide GLASS_CEILING for women is defined as the value of GS_DELTA. GSDELTA_MINORITY (orange dots), or the difference in the weighted average composite pay grades for non-minority and minority employees, is nearly 1.4 GS levels in 2000, decreasing to about 0.75 GS levels in 2013. GSDELTA_MEN (gray dots) shows that the GS level difference between non-minority men and minority men is about 1.3 GS levels in 2000, decreasing to about 0.7 GS levels in 2013. GS_WOMEN (yellow dots) shows that the pay gap between non-minority women and minority women is about 0.9 GS levels in 2000, decreasing to 0.6 in 2013. The shrinking size of the pay gaps between all groups indicates that significant progress has been made towards mitigation of glass ceilings within the Federal government during the period of study. This is an indication that societal and economic pressures have likely contributed to this increasingly egalitarian workforce.

That said, Figure 1 suggests that a glass ceiling exists and persists across Federal agencies in U.S. government from 2000-2013 which is a continued cause for concern. Figure 2 shows the distribution of GS pay grades for male Federal employees and Figure 3 shows the distribution for female Federal employees. The contours and peaks of the two graphs clearly show that larger numbers of male employees hold higher GS level positions throughout the entire Federal government as a whole. Unlike conventional measures of *pay inequality* used in glass ceiling studies, our approach highlights *positional inequality*. The graphs illustrate that the average male employee holds a higher position than the average female employee within the Federal government. Even though the number of female employees is increasing over time, their relative positions within the organizational hierarchy, as defined by GS level, appear to remain consistently lower than their male counterparts which supports prior research (Smith, 2002).

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Figure 1. Difference in average pay grades by year

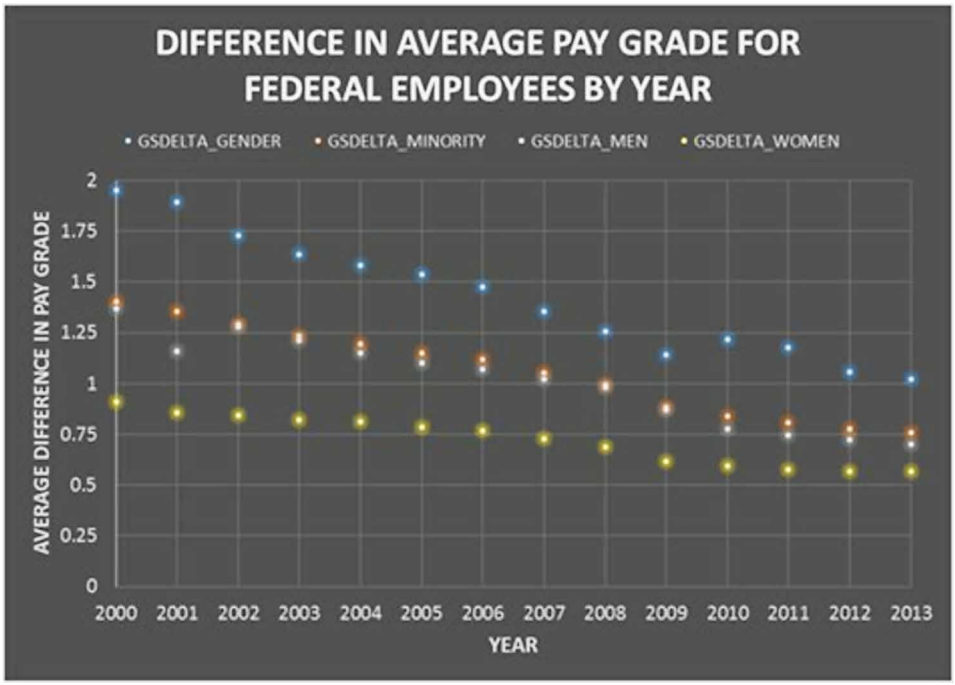

Figure 2. Distribution of pay grades for male employees by year

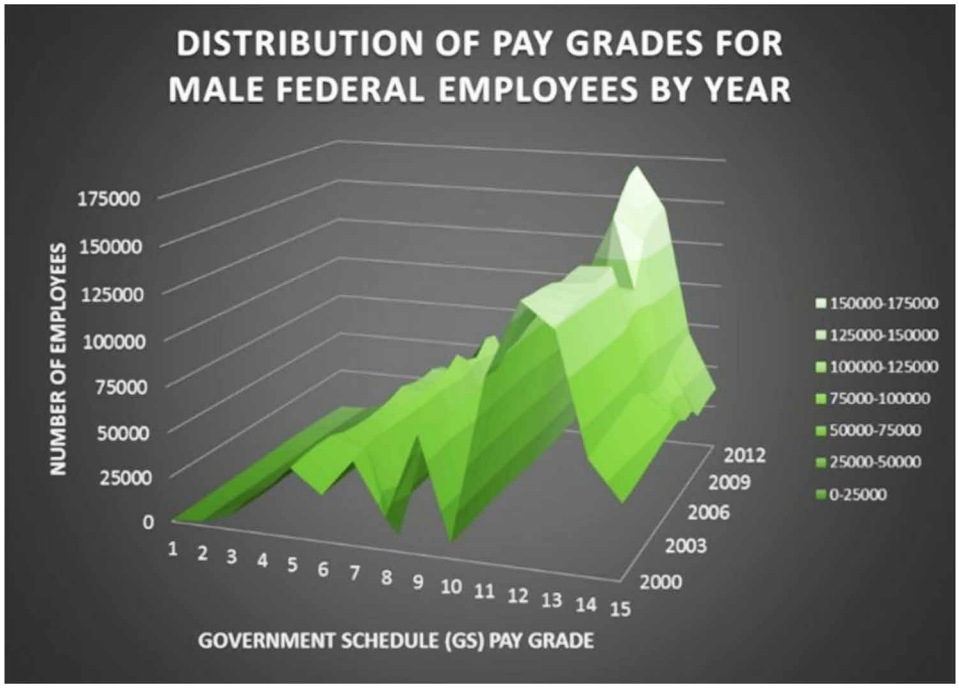

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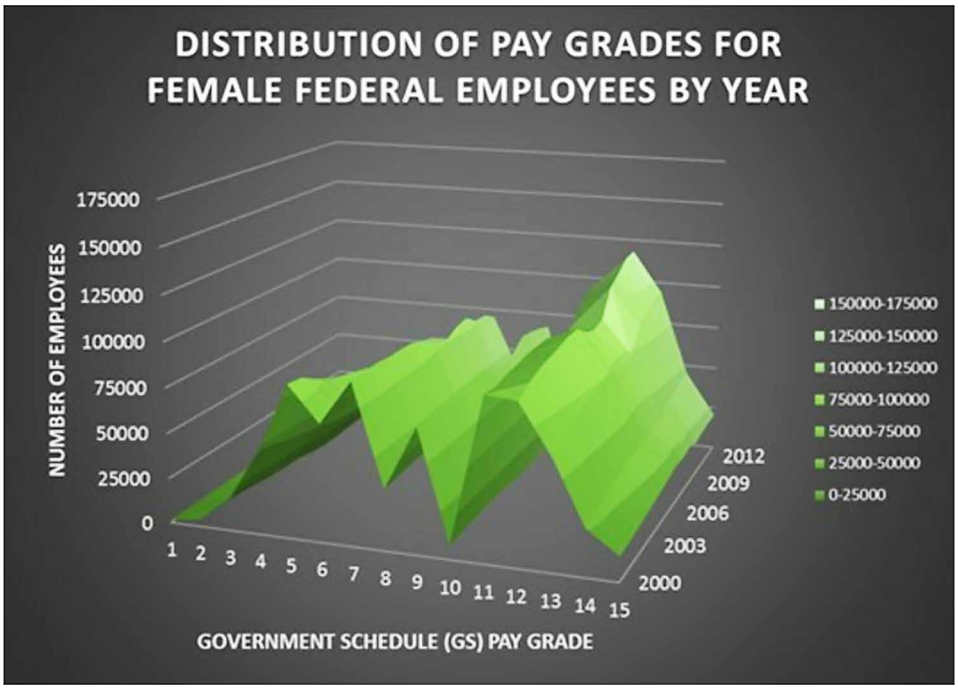
Figure 3. Distribution of pay grades for female employees by year



The total dollar amount of funding allocated to the granting agency's Phase II awards in the relevant program (SBIR or STTR) in the same calendar year that the original focal Phase I award is granted to the firm is also captured. This total dollar amount is a proxy for the granting agency's potential future supply of funds during the timeframe when the firm may be eligible to apply for a Phase II award. The variable BUDGET is computed as the base 10 logarithm of this amount.

Finally, at the firm-level, the researchers define two explanatory variables related to ownership which represent the demographic diversity of grantees. This information is collected by the Small Business Administration (SBA) to determine eligibility for Federal contracting, but is not explicitly considered as a selection factor in making Phase I or Phase II award decisions in the SBIR/STTR programs. WOMEN_OWNED equals 1 if the firm is woman-owned, and equals 0 otherwise.[14] MINORITY_OWNED equals 1 if the firm is minority-owned, and equals 0 otherwise.[15]

Control Variables: Several control variables are incorporated to account for relevant factors which may influence the likelihood of successfully transitioning a SBIR or STTR award from Phase I to Phase II. HUBZONE_LOCATED equals 1 if the firm receiving the focal Phase I award is located in a Federally-designated Historically Underutilized Business Zone (HUBZone) and equals 0 if it is not. The firm-level control variable CERTIFIED8A equals 1 if the firm is a small, economically disadvantaged business under the SBA's 8(a) Business Development Program, and equals 0 if it is not.[16] GRANT_MILL is a firm-level binary control variable which equals 1 for the top 25 firms which received the most Phase I or Phase II grants between 2001 and 2011, and equals 0 otherwise. Each of these firms had at least 100 SBIR/STTR grants. Lerner (1996) notes the existence of grant mills, which are firms that are successful in securing large numbers of Federal grants for initial R&D funding, but appear to generate little to no actual technology commercialization. INITIAL_AMOUNT is the dollar amount of the original Phase I

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grant. The study also includes two state-level time-varying covariates: (1) KAUFFMAN_INDEX is the state-level Kauffman Index of Entrepreneurial Activity[17] and (2) CLUSTER_STRENGTH is the state-level economic strength of the regional industry clusters present (Delgado, Porter, & Stern, 2014).[18] To account for unobserved heterogeneity associated with the SBIR and STTR awards in the sample, dummy variables are added for the AGENCY granting the focal award, the STATE in which the firm receiving the focal award is located, and the YEAR the focal award is granted.

RESULTS

Descriptive Statistics and Correlations

Figure 4 summarizes the descriptive statistics for variables in the study. About 33% of all Phase I grants TRANSITON to Phase II. The average level of the GLASS_CEILING (the difference between the weighted average composite of the pay grades for male and female Federal employees) is about 1.45 pay grades during the sample timeframe. The DIVERSITY_INDEX (the probability that any two randomly selected employees in particular agency are from different racial or ethnic categories, as formally defined by the OPM) is about 0.52. In terms of firm ownership status, among Phase I award recipients in the sample, 7.1% are minority-owned and 10.2% are women-owned. The average Phase I award amount is $114.7K. No pair of variables in any of the models has a correlation greater than 0.40 ($p<0.01$), which is the correlation between MINORITY and GENDER. A diagnostic check indicates that multi-collinearity is not an issue.

Figure 4. Descriptive statistics

Variable	Mean	S.D.	Min	Max
TRANSITION	0.326	0.469	0	1
GLASS_CEILING	1.448	0.238	1.055	1.893
DIVERSITY_INDEX	0.517	0.083	0.359	0.674
BUDGET	5.296	0.620	3.079	5.889
MINORITY_OWNED	0.071	0.257	0	1
WOMAN_OWNED	0.102	0.303	0	1
HUBZONE_LOCATED	0.050	0.218	0	1
CERTIFIED8A	0.027	0.164	0	1
INITIAL_AMOUNT	11.470	10.497	0	341.844
KAUFFMAN_INDEX	0.306	0.089	0.082	0.724
CLUSTER_STRENGTH	0.463	0.121	0	0.687

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Logit Models

Three binary logistic regression models are specified with TRANSITION as the dependent variable (equals 0 if there is no subsequent Phase II award granted for the original focal SBIR or STTR Phase I award, and equals 1 if there is a subsequent Phase II award granted), and all of the explanatory and control variables included. The results of this analysis are presented in the Appendix Figure 5.

As shown in Figure 5, the researchers find that for every unit increase in size of the GLASS_CEILING, the odds of TRANSITION decrease by 80%. For every unit increase in GLASS_CEILING, the TRANSITION odds for firms owned by men decreases by 74% and the TRANSITION odds for firms owned by women decreases by 98% which supports H1a. The decrease in the TRANSITION odds for female technology entrepreneurs appears greater than for their male counterparts. For every unit increase in GLASS_CEILING, the TRANSITION odds for minority-owned firm decreases by 13% which supports H1b which predicted a lower likelihood that minority-owned firms would secure Phase II funding.

For every unit increase in BUDGET, the odds of TRANSITION increase by 23% in the full model. For every unit increase in BUDGET, the TRANSITION odds for firms owned by men increases by 21% and the TRANSITION odds for women-owned firms increases by 63%. Since the odds of securing Phase II R&D awards increases in all three models, H2 is supported. H3 is not supported. It is hypothesized that male-owned firms have a higher likelihood of securing Phase II awards due to the effects of homophily but instead women-owned firms have a significantly higher likelihood to TRANSITION when BUDGET increases.

DISCUSSION

Overall, as the glass ceiling or average pay grade gap between male and female employees gets larger, the odds of securing follow-on Federal R&D funding become lower for all firms (supporting H1a and H1b). However, the negative impact appears to be substantially greater for women technology entrepreneurs compared to their male counterparts. Thus, after incorporating a range of explanatory factors and controlling for agency, state, and year fixed effects, the researchers find that the existence of an internal, government-wide glass ceiling across grantor agencies is linked to a negative external effect for grantees seeking additional R&D funding.

Based upon these findings, there is one main practical implication for women and minority-owners of technology firms. These firms should take advantage of the outreach services already provided and continue to seek out and apply for Federal R&D grants. As agencies continue to employ a more diverse workforce, and more women and minorities gain access to positions of power, the glass ceiling will get smaller which improves the odds that follow-on R&D funding will be secured. The result of this is that more women and minority-owned firms will commercialize their technologies which will indirectly build the case for increased diversity in the upper echelons of private business and government.

These findings lead to several important implications for policymakers. First, a glass ceiling in the Federal government still exists. While progress has been made, further progress is required to address this going forward. Agencies such as the Department of Defense have made good strides in workforce diversity (Joshi et al., 2017) but this is clearly not enough. All Federal agencies can go further. Increasing opportunities for women to hold meaningful executive positions is the next critical step towards gender equality in government.

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Secondly, a significant negative effect in securing follow-on grant funding provides support for the promotion of mechanisms which may help to counteract these effects. Policy which establishes or maintains educational outreach services or experiential grantee training workshops may help to increase both initial applications from women-owned businesses as well as success rates in follow-on funding. Prior research has shown that human capital-related factors like education and experience has a positive impact for women-owned small businesses (Coleman, 2007). Therefore, the increased availability of outreach services for all grantees and especially for women entrepreneurs may help to mitigate some of the observed glass ceiling effects.

Thirdly, it is critical that policymakers come to realize that while a glass ceiling is obviously not desirable, there are also negative implications which may go unnoticed which can work to undermine efforts in other government-related areas. R&D funding like SBIR and STTR grants are considered gap funding. The Federal government provides this R&D funding to support projects that private financial capital sources would not necessarily fund. If the government did not have such programs, the resulting commercial activity and the social benefits from technology spillover would otherwise be lost (Audretsch, Link, & Scott, 2002). For example, less funding due to large glass ceilings mean that businesses may not get the funding necessary to innovate and commercialize technology. As a result, there may be added pressure to maintain job counts in the private sector, there may be less commercialization overall, and the societal benefits of technology spillover will decrease.

In support of H2, the amount of available budget is consistently significant and positive across all models (for male and female-owned businesses). Interestingly, the effect is more positive (63% higher likelihood) when considering women-owned businesses which does not support H3 which predicts that male-owned Phase I grantees have a higher likelihood of securing Phase II grants than women-owned grantees. Prior research on homophily indicates that a white male dominated hierarchy would prefer grantees who are more similar to themselves (other white male-owned business owners). This perhaps does not hold in a highly regulated context like the Federal government or perhaps this finding is some indication that outreach and educational services for women-owned businesses are legitimately contributing to higher performance. It could also be a function of reverse discrimination when there is more funding available. Decision-makers may seek out and promote (fund) proposals from underrepresented parties to balance out the diversity across grantees when excess funds are available. Regardless, it is of great interest that women-owned businesses have a significantly higher likelihood of securing Phase II awards when the available budget increases because it can potentially lead to policy shifts which balance the odds irrespective of the budget.

LIMITATIONS

The authors acknowledge several limitations. First, the context of this study is strictly limited to the Federal agencies which participate in SBIR and STTR along with associated grantees. Generalizability is therefore limited to public/private partnerships similar to these programs. While the U.S. Federal government is enormous and represents the largest civilian employer in the country (2.7 million employed civilians)[19], the authors cannot make claims that results directly apply to private employers. In a similar vein, the U.S. as a developed economy has its own unique policies and structures which means that the results may not exactly conform to other public/private partnerships in other countries, especially those in emerging or developing economies. A third limitation is tied to the sample time frame of the study.

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Because multiple databases were used to build the final dataset, at the time of the analysis, complete data was only available from 2001 through 2011. The authors acknowledge that although several years are not included, the sample does represent 44% of all SBIR/STTR awards and 52% of all grantees since inception of both programs. Given the sheer size of the ten-year dataset and the fact that multiple recessions and presidential elections are included in the time frame, the authors believe that the sample is generalizable to current practice.

FUTURE RESEARCH DIRECTIONS

The results of this study leads to possible avenues for future research. Minority-owned technology grantees are 13% less likely to get follow-on R&D funding compared to non-minority-owned firms (supporting H1b). This indicates that race/ethnicity along with gender is perhaps another critical dimension warranting further study. While not the focus of this study, in previous research, women and minorities both are characterized as underrepresented groups in the workplace. Further research in the area of representative bureaucracy (Bradbury & Kellough, 2007) may prove useful in being able to understand how the current governmental body accurately reflects the demographics as well as the diverse views of its constituents.

Future research could also consider how the effects of the U.S. Federal glass ceiling may differ from that of other developed countries where high levels of innovation or technology commercialization take place. Other countries will differ in terms of governmental structure, innovation policies as well as size. These factors could all impact R&D funding in public/private partnerships differently. A country-level comparison by technology innovation or international business researchers could prove useful for guiding cross-border trade policy in addition to providing a better understanding of how diversity varies across country.

CONCLUSION

This study contributes to diversity research by introducing a novel measure for glass ceilings in organizations. The research conducted also pushes the boundaries of the current literature by empirically predicting outcomes of glass ceilings in the U.S. Federal government. The authors believe these findings have implications for practice, for the field of gender research in business, and for policy regarding how outcomes reflect activities at the boundary of governmental entities and the external environment. The hope is that this research will shed new light on the direct (persistence of differential pay) and indirect (gender differential in funding) challenges that women and minorities still face 32-years after the glass ceiling term was first coined.

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2 https://womenintheworkplace.com/

3 https://www.technologyreview.com/s/536821/making-innovation-happen-bridging-the-gap-between-concept-and-development/

4 https://www.sbir.gov/about-tibbetts-awards

5 https://www.sbir.gov/sites/default/files/FY15_SBIR-STTR_Annual_Report.pdf

6 http://sbir.gov/about/about-sbir

7 SBA SBIR Policy Directive February 24, 2014

8 https://www.sbir.gov/about/about-sttr#sttr-mission

9 https://www.sbir.gov/about/about-sttr#sttr-mission

10 https://www.sbir.gov/about/about-sbir

11 https://csbaonline.org/uploads/documents/CSBA6196-2017-Budget-Analysis_PRINT.pdf

12 See https://www.sbir.gov/sbirsearch/firm/all for the Award Listing and Company Listing databases. The Annual Reports database is available at https://www.sbir.gov/awards/annual-reports.

13 See https://www.opm.gov/policy-data-oversight/diversity-and-inclusion/federal-workforce-at-a-glance/ for the OPM database.

14 https://www.sba.gov/content/women-owned-small-business-program

15 https://www.sba.gov/content/minority-owned-businesses

16 See https://www.sba.gov/content/8a-requirements-overview

17 http://www.kauffman.org/microsites/kauffman-index

18 http://clustermapping.us, Institute for Strategy and Competitiveness, Harvard Business School

19 https://www.bnd.com/living/article79507112.html

20 A DUNS or Dun & Bradstreet number is a 9-digit unique identifier for each physical location of a business. Number assignment is free for all businesses required to register with the Federal gov-

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ernment for contracts or grants. For details, see: https://www.sba.gov/contracting/getting-started-contractor/get-d-u-n-s-number.

[21] The report is prepared in compliance with the law (5 U.S.C. 7201 and 5 CFR Part 720, Subpart B) and contains information on the representation of minorities within the Federal Government and best practices of Federal agencies. For details, see https://www.opm.gov/policy-data-oversight/diversity-and-inclusion/reports/#url=Federal-Equal-Opportunity-and-Recruitment-Program

[22] Note that the Federal government only required grant recipients and contractors to obtain a DUNS starting in 2003, so not all firms in the sample have a valid DUNS. If a DUNS is not available, then the researchers use a combination of company name, address, agency tracking number, contract, and award title to search for a possible match.

[23] To resolve changes in firm names, addresses, and ownership status, self-reported data provided by firm representatives is utilized. This data is updated via the Federal System for Award Management (SAM) and searchable online in the SBA's Dynamic Small Business Search (DSBS) database. See https://www.sam.gov/portal/SAM/##11.

[24] The years 2001-2011 span the time period after enactment of the SBIR Program Reauthorization Act of 2000, but before the start of the SBIR/STTR Reauthorization Act of 2011, which mandated major policy changes in the administration of these programs across participating Federal agencies. By focusing exclusively on this period, the researchers are able to eliminate the introduction of major new policy directives as an alternative explanation for the observed effects. This timeframe represents a period of increased public disclosure from Federal agencies in providing accurate workforce composition and diversity data which is essential for this study.

[25] The developed algorithm enabled the researchers to automatically link approximately 94% of the Phase II awards to their originating Phase I awards. The remaining 6% were matched by manually searching and checking additional databases on the awarding agency websites. 160 awards were excluded from the sample due to missing or incomplete records.

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APPENDIX

Summary of Data Sources and Data Collection Procedures

Table 1.

Database	Description of Database Contents
Award Listing (SBA)	Contains the phase (I or II), year, agency, agency tracking number, funding amount, award title, abstract, contract, solicitation topic code, company name, DUNS,[20] address, contact name, and ownership status (minority-owned, woman-owned) for all awards (112,506 Phase I and 45,022 Phase II) from the SBIR (1983-2016) and STTR (1994-2016) programs. The researchers collect the entire population of 157,528 Federal small business research grants awarded from the inception of both programs to the present.
Company Listing (SBA)	Captures the company name, DUNS, address, contact name, and ownership status (minority-owned, woman-owned) of all firms that received at least one SBIR Phase I award during 1983-2016 or at least one STTR Phase I award during 1994-2016. This represents the known population of firms that have ever participated in the SBIR or STTR programs as award recipients at any time during the history of either program. The researchers collect the full set of 28,164 firms receiving at least one Phase I award.
Annual Reports (SBA)	Aggregates agency-level data regarding the total number of proposals submitted, the total number of Phase I and Phase II awards granted, and the total funding allocated, by year for the SBIR program (1990-2013) and STTR (2000-2013), respectively. This database summarizes essential implementation differences across agencies over time. The researchers collect this data for all Federal agencies and years for the SBIR and STTR programs.
Workforce Diversity (OPM)	Describes the demographics of the Federal workforce in terms of the race, ethnicity, and gender of government employees by agency and by year. This data is presented in two formats. The Federal Office of Personnel Management (OPM) is also required to annually report to Congress on progress under the Federal Equal Opportunity Recruitment Program (FEORP).[21] The researchers access the 2001-2011 data published in PDF form. Then the text content of the FEORP reports is digitized using optical character recognition (OCR) processing software. After digitization, the researchers consolidate the reports into a single, uniform dataset.
Database Cross-Check and Consolidation Procedures for SBA Databases	
1. Any duplicate entries found in the *Awards Listing* database are removed and the researchers replace any revised awards with the corrected entries found in the same database. 2. The variants of company names are standardized within the *Awards Listing* and *Company Listing* databases separately and then across both databases collectively, to disambiguate and identify unique firms. Wherever possible, the DUNS is relied upon as a database index key to correctly and precisely match unique firms.[22] The researchers account for changes in firm names, addresses, & ownership status.[23] 3. Third, all firms that did not receive any SBIR or STTR Phase I or Phase II awards during 2001-2011 are excluded, which is the focal timeframe of our study.[24] 4. Fourth, using the assigned agency tracking number as a unique identifier for each award as well as the content of the award title, abstract, contract, solicitation topic code, company name, DUNS, and address, the researchers apply a combinatorial text pattern matching algorithm to systematically link each Phase II award with only one originating Phase I award.[25] 5. Fifth, as part of this matching process, all SBIR or STTR Phase I awards made after 2011 are excluded. It is assumed that any SBIR or STTR Phase I award from 2011 or earlier without a corresponding linked Phase II award by 2014 did not transition from Phase I to Phase II during its timeframe of eligibility. The possibility of right-censoring the data is reduced and enables the researchers to later apply a logistic regression analysis to evaluate the binary outcome of transitioning from a SBIR or STTR Phase I to a corresponding Phase II award. As a result of this five-step process, a sample of 69,771 awards (52,286 Phase I and 17,485 Phase II) granted to 14,658 unique firms is extracted for the SBIR and STTR programs.	

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Logistic Regression

Figure 5. External effect of internal GLASS_CEILING - summary of logit models

DESCRIPTION:	Full Model		WOMAN_OWNED=0		WOMAN_OWNED=1	
MODEL:	1		2		3	
	Coefficients	Odds Ratios	Coefficients	Odds Ratios	Coefficients	Odds Ratios
DEPENDENT VARIABLE:	TRANSITION	TRANSITION	TRANSITION	TRANSITION	TRANSITION	TRANSITION
VARIABLES:						
Explanatory						
GLASS_CEILING	-1.6190***	0.1981***	-1.3374***	0.2625***	-3.8718***	0.0208***
	(0.4643)	(0.0920)	(0.4952)	(0.1300)	(1.3839)	(0.0288)
BUDGET	0.2096***	1.2332***	0.1900***	1.2093***	0.4892***	1.6311***
	(0.0297)	(0.0367)	(0.0310)	(0.0375)	(0.1101)	(0.1796)
WOMAN_OWNED	-0.0130	0.9871				
	(0.0365)	(0.0360)				
MINORITY_OWNED	-0.1421***	0.8675***	-0.1892***	0.8276***	-0.1955**	0.8224**
	(0.0444)	(0.0385)	(0.0555)	(0.0460)	(0.0976)	(0.0803)
Controls						
HUBZONE_LOCATED	-0.3399***	0.7118***	-0.5285***	0.5895***	-0.0362	0.9644
	(0.0570)	(0.0405)	(0.0768)	(0.0452)	(0.1145)	(0.1104)
CERTIFIED8A	0.0292	1.0297	0.0615	1.0634	0.0601	1.0619
	(0.0597)	(0.0614)	(0.0682)	(0.0725)	(0.1401)	(0.1488)
GRANT_MILL	-0.0640*	0.9380*	-0.0341	0.9665	-0.1901*	0.8269*
	(0.0350)	(0.0328)	(0.0385)	(0.0373)	(0.1008)	(0.0834)
INITIAL_AMOUNT	0.0159***	1.0160***	0.0194***	1.0196***	-0.0010	0.9990
	(0.0011)	(0.0011)	(0.0012)	(0.0013)	(0.0030)	(0.0030)
KAUFFMAN_INDEX	0.2002	1.2216	0.2316	1.2606	-0.0374	0.9633
	(0.1937)	(0.2366)	(0.2056)	(0.2592)	(0.6335)	(0.6103)
CLUSTER_STRENGTH	0.1068	1.1127	0.0104	1.0104	0.6712	1.9566
	(0.1504)	(0.1674)	(0.1594)	(0.1611)	(0.5094)	(0.9966)
AGENCY Fixed Effects	Included	Included	Included	Included	Included	Included
STATE Fixed Effects	Included	Included	Included	Included	Included	Included
YEAR Fixed Effects	Included	Included	Included	Included	Included	Included
Constant	-1.0102*	0.3641*	-1.2319**	0.2917**	-3.2345*	0.0394*
	(0.5826)	(0.2121)	(0.6153)	(0.1795)	(1.9648)	(0.0774)
Observations	56,006	56,006	50,276	50,276	5,626	5,626
McFadden's pseudo-R^2	0.0851	0.0851	0.0870	0.0870	0.0829	0.0829
degrees of freedom	79	79	78	78	67	67
chi^2	6018	6018	5536	5536	582.3	582.3
log likelihood	-32365	-32365	-29049	-29049	-3222	-3222

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

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Chapter 99
Safety of Women Journalists in Nigerian News Media:
Exposing the Hushed Gender-Based Discriminations

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ABSTRACT

In recent decades, women journalists' professional safety has attracted an enormous research attention globally and in Nigeria. Interestingly, often similar findings are likely generated by most of the studies highlighting stiff gender-based challenges. This chapter investigated the safety experiences of Nigerian women journalists to identifying the typology of gender-based discriminations and coping strategy affected women journalists used to manage to work in a male-dominated media industry. Employing a semi-structured interview approach, 37 participants (25 women journalists, 10 men journalists, and 2 human resource managers) were interviewed from 12 broadcast media organisations in Northern Nigeria. The data were analysed using thematic analysis and the findings showed that Nigerian women journalists experience different types of gendered unsafety including discrimination in newsgathering and production and sexual harassment; most of the affected women used risky coping strategies such as ignoring; most media organisations lacked policies and frameworks to handle such cases.

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INTRODUCTION

Historically, journalism practice in Nigeria is traced back to the late Reverend Henry Towsend of the Presbyterian Church located in Calabar and later relocated to Abeokuta. The first newspaper was published on December 3, 1859, which was written in Yoruba dialect and titled: *IweIroyin Fun Aron Ara Egbaati Yoruba*, meaning a newspaper publication written for the Egba and Yorubas. The primary aim of the establishment of the newspaper was to get people to read (Ajibade, 2003; Tijani-Adenle, 2019). Although the first newspaper in Nigeria was published in 1859, the "emergence of modern Nigeria in 1914" (Omu, 1978, p.39) paved the way for a vibrant media scene, and many nationalists established newspapers for the propagation of self-government, nationalist agitations and to counter the excesses of colonial regimes such as excessive taxation, the repudiation of Nigerian religions, languages and traditional-political institutions, oppression of Nigerians and abuse of their rights among others (Ajibade, 2003). Notable among the nationalists who established early newspapers include Sir Akitoye Ajasa who established *Nigerian Pioneer* in 1914, Ernest Sese Ikoli who established *African Messenger* in 1921, Herbert Macaulay who established *Lagos Daily News* in 1925, Malam Abubakar Imam who established *Gaskiya Ta Fi Kwabo* in 1939 and Dr Nnamdi Azikiwe who established *West African Pilot* in 1937, etc. (Ukiwo, 2005).

In Nigeria, like in other parts of the world, the media industry was dominated by print and broadcast media. However, the development of the broadcast media was not as rapid as the print media. Nevertheless, "its establishment and progress is no less political" (Tijani-Adenle, 2019, p.17). Media broadcasting in Nigeria commenced in 1932 when "Lagos began to relay the British Empire Service from Daventry, England" (Uche, 1989, p.36). However, as soon as the three major geo-political regions (Northern, Western and Eastern) were established in preparation for the country's independence, the indigenous regional governments "swiftly established their broadcasting systems to tackle colonial authority's exogenous broadcasting policies and to project their regional cultures, policies and political parties" (Tijani-Adenle, 2019, p.17; Uche, 1989).

Largely, "the early Nigerian news media were inevitably political" (Omu, 1978, p.11). The news media served as watchdogs to the colonial administrations and sensitised the people on the need to oppose the imperialists and struggle for self-governance. Unfortunately, women were not key players at this critical point in the history of the media because the social and gender norms in colonial Nigeria did not encourage women to practise the "nationalist and agitational journalism" (Omu, 1996, p.13) that was regarded as "too dangerous and daring for women, who were perceived to be weak, needed protection and expected to tend to the home and children" (Bammeke, 2013). However, despite the overarching predominance of men, it would be wrong to assume that women were completely absent from the media industry in colonial Nigeria. Few notable women excelled although "very little information" (Omu, 1996, p.13) is available about them in the literature. For example, there is a record of a Miss F. Ronke Ajayi who edited the *Nigerian Daily Mail* that was published in 1931 (Omu, 1978, p.67). She was known as the friend of the publisher, H. Antus Williams and "who saw her appointment as a joke" (Omu, 1996, p.13) jeered at her. By the 1950s, women had had a considerable footprint in Nigerian journalism however, most of them were writing features, women content and gossip pages. For example, some of the columns or pages were titled "As I see it" by A. O. Alakija of *Daily Times*, "Women's Corner" by Eve, *Pilot Newspaper*'s "Milady's Bower" among others (Falola, 1999).

The era between 1960, when Nigeria gained independence and 1999, when it returned to stable democratic governance after many years of military interregnums was, however, remarkable for Nigerian

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women as many of them gained entry into the news media, broke glass ceilings and made significant contributions to the journalism profession (Ikem, 1996). The creation of women pages by most newspapers and magazines gave women inroads into the media with many of them becoming women page editors, editors of soft desks and publications and editors of magazines between the 1970s and 1990s. For example, Dr Doyin Abiola became the first female editor of a national newspaper, the *National Concord*, in 1980 (Falola, 1999; Ikem, 1996). A chronology of women journalism in Nigeria cannot be complete without mentioning the Nigerian female journalism pressure group, the Nigerian Association of Women Journalists (NAWOJ), which was created in 1989 (Ikem, 1996; Omu, 1996). Many journalism and mass communication courses were developed in universities and polytechnics, female students became preponderant in the journalism, media and communication departments (Domatob, 1988) and more women (compared to the colonial period) entered the news media (Akinfeleye, 2011, p.35).

However, media scholars have been fast to indicate that this progress, although remarkable, do not indicate that women journalists have achieved equality with their male counterparts in the profession. Because, generally, women were significantly absent from the media scene and even when they were given opportunities, it was on the soft beats where 'critical' and/or dangerous reporting was not perceived to be taking place (Ikem, 1996). The significance of this for the status of women journalists in Nigeria is that women did not join the media as early as men and so they had a late start/entry into the industry. They were also assigned to a low level and less significant beats when they eventually joined. Hence, this can be said to be the foundation of the inferior position of women in the Nigerian news media today, as the industry was established when very few women were involved in governance and the economy, and significantly absent from the public sphere (Tijani-Adenle, 2019).

BACKGROUND

Threatening violence against journalists, especially against women journalists is a worrying global trend. Although both male and female media professionals, as well as other media practitioners, are increasingly targeted for their reporting, yet women journalists face increased safety risk due to their specific vulnerabilities entailed by gender (Jamil, 2019). They are subject to the same types of attacks as their male counterparts – killings, imprisonment, physical and psychological attacks, acts of intimidation, harassment, threats, surveillance, etc. However, violence against women journalists is very often manifested in the form of sexual attacks. They also face risks in traditionally "safe" environments, such as their newsrooms. They are vulnerable to attacks not only from those attempting to silence their coverage, but also from sources and colleagues, and even family members. Cultural norms and stigmas coupled with a lack of faith in their supervisors and the authorities to act upon their complaints discourage reporting of gender-based violence. Unfortunately, in this context, silence prevails (Chocarro, 2019; Tijani-Adenle, 2019). The implications are that when women journalists are restricted or hounded out of the profession, society is denied access to a diverse range of information and perspectives. There is growing international consensus that women journalists face specific threats to their safety and professional development and that integration of a gender-sensitive approach is essential to promoting the safety of journalists worldwide especially in African countries such as Nigeria and ensuring there is diversity among not just media actors but content that sheds light on all aspects of society (Chinwuba, 2016; Chocarro, 2019).

This study sought to contribute toward providing a further understanding on safety-related discrimination Nigerian women journalists experience to promote the safety of women journalists in the country

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and contribute toward building the literature, an area of research that has received little attention so far. Therefore, an attempt was made to provide the answer to the following two research questions (RQs): RQ 1 - In a news media industry dominated by patriarchal newsroom culture, what are the experiences of Nigerian women journalists regarding safety in the light of gender-based discrimination and sexism (sexual harassment)? RQ 2 - What are the safety coping strategies regarding sexual harassment the women journalists adopted to enable them to carry out their duty in a male-dominated newsroom? This study contributes to the growing body of literature on the experiences of women in the Nigerian news media regarding gender discrimination and sexism; it examines the inequalities that exist across the gender divide, explores how such inequalities are produced, negotiated and challenged, and the forms they take in the broadcast media industry in a Nigerian context.

LITERATURE REVIEW

Conceptualising Journalists' Safety Based on Global Legal Frameworks Perspective

The United Nations (UN) strategy on the safety of journalists, the UN Plan of Action on the Safety of Journalists and the Issue of Impunity (2012) (which is the first of its kind ever), declares that it is based on the principle of safety toward a gender approach and calls for ensuring the promotion of the safety of women journalists and the fight against impunity. Additionally, the report in 2012 by the UN Special Rapporteur on the promotion and protection of the right to freedom of opinion and expression, Frank La Rue, highlighted the need for a gender-safety approach when considering measures to address the issue of violence against journalists. Furthermore, in the same year, the first Human Rights Council (HRC) resolution on the safety of journalists acknowledged "the specific risks faced by women journalists in the exercise of their work, and underlining, in this context, the importance of taking a gender approach when considering measures to address the safety of journalists" (Chocarro, 2019; UNHRC, 2017, online).

In 2017, the UN General Assembly passed a resolution on the safety of journalists and the issue of impunity with a strong focus on gender safety. It emphasised the need to take measures to effectively "tackle gender-based discrimination, including intimidation, harassment and violence offline and online, incitement to hatred, inequality and gender-based stereotypes; to enable women to enter and remain in journalism on equal terms with men while ensuring their greatest possible safety, and to ensure that the experiences and concerns of women journalists are effectively addressed and gender stereotypes in the media are adequately tackled" (Chocarro, 2019; UNGA, 2017, online). The latest document related to the implementation of the UN Plan of Action on the Safety of Journalists and the Issue of Impunity in 2017 includes several references to the need to mainstream gender safety into initiatives to tackle violence against journalists. In 2018, the HRC passed a resolution on preventing and responding to violence against women and girls in digital contexts; the resolution condemned acts of violence against women in political and public life, including journalists (UNESCO, OHCHR, 2017; UNGA, 2018).

Generally, international standards regarding gender safety are shaped by the overall human rights framework. Key among these is the Universal Declaration of Human Rights of 1948, in which the right to freedom of expression is enshrined within Article 1934 and the Convention for Elimination of all forms of Discrimination against Women (CEDAW) of 1979, which recognises women's rights and specifically requires states to take appropriate measures "to ensure full development and advancement of

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women". The Beijing Platform for Action (1995) also identifies media as a critical area of concern and points to the need to promote a balanced and non-stereotyped portrayal of women in the media, and to support women's increased participation and access to expression and decision-making in and through the media and new communications technologies. Also relevant is UN Security Council Resolution 1325 (2000), which affirms the important role of women in the prevention and resolution of conflicts and peacebuilding (Chocarro, 2019; OHCHR, 2017).

From a regional angle, various organisations have addressed the issue of violence against women journalists. In 2013, the Council of Europe (CoE) passed a recommendation on gender equality and media and prepared an implementation handbook. In 2016, CoE's recommendation CM/Rec 2016 on the protection of journalism and safety of journalists and other media actors noted the gender-specific threats that many journalists face and called for "urgent, resolute and systematic responses". In 2018, the European Parliament issued a report on gender and media equality, condemning attacks against women journalists and calling for States and other actors to take responsibility for promoting gender equality in media. The Organisation for Security and Co-operation in Europe (OSCE) Ministerial Council's Decision 3/18 on the safety of journalists condemns attacks against women journalists, including "sexual harassment, abuse, intimidation, threats and violence, including through digital technologies" (CoE, 2016, online; European Parliament, 2017)

In Africa, the African Union (AU) launched a Network of Reporters on Women, Peace and Security in 2016. In 2017, the Nairobi Declaration expressed concern over increasing abuse of women on social media. While it does not make a specific reference to women, the 2017 Addis Ababa resolution on the safety of journalists called for the creation of a working group on the safety of journalists within the African Union. In 2018, UN, OAS, OSCE and the African Commission for Human and People's Rights' (ACHPR) Special Rapporteurs on freedom of expression spoke out against the particular challenges faced by women journalists, including gender-specific attacks, online harassment, inequality within the media, and general societal discrimination against women, all of which pose barriers to working as a journalist (ACHPR, OEA, OHCHR, OSCE, 2018; UNESCO, 2017).

Like the constitutions of many other UN member nations, the Nigerian Constitution upholds the freedoms of the press but is silent on safety issues, which is a lacuna that needs to be addressed. It is expected this study will provide an empirical underpinning toward closing that constitutional void. But despite this demonstrable advance in international standards, commitments and recommendations have not been acted upon by governments. The lack of impact of these documents and mechanisms "raises legitimate questions" about their efficacy and the potential for meaningful implementation by states (Chocarro, 2019; UNGA, 2018).

Gendered News Production and Management

Women have significantly secured entry into the news media the world over, but increased access has not eradicated the persistence of misogynist, sexist, and limiting roles for women. Women are often deemed incapable of handling the rigours of news journalism and thus assigned to cover 'soft' beats and systematically excluded from reaching editorial and top management positions (Byerly, 2014). Arguing in support of this perspective, North (2016a) notes:

Research from around the globe has long emphasised the problem of vertical segregation in the news media where women remain largely absent from key editorial decision-making roles. Horizontal segrega-

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tion, however, where there are gendered divisions of tasks associated with reporting, is also an ongoing issue... while more female reporters appear to be covering hard news rounds like politics and business, the majority are still assigned to cover the bulk of the soft news areas of features, the arts, education and health—and most perceive that female reporters remain pigeon-holed in those traditionally female story areas. (p.356).

Several global, regional and national studies have established the clustering of women on the soft beats with scholars noting that it has become "a well-established practice that is hard to change" (Sarikakis, 2014, p.67). Findings from the 2015 Global Media Monitoring Project (GMMP) will be a good example to cite. The GMMP has been monitoring media contents for gender equity every five years from 1995. The 2015 study, which surveyed 114 countries (including Nigeria) across media platforms, notes that "Political and crime news are the two topics least reported by women in most regions" (GMMP, 2015, p.52 cited in Tijani-Adenle, 2019). The report also notes that "the greatest gain for women has been in reporting celebrity, arts, media and sports stories" (GMMP, 2015, p.52). While commenting on the GMMP findings, Mindy Ran, the Gender Council Co-Chair of the International Federation of Journalists (IFJ) notes that "Sadly, these statistics tell us that we are still not being trusted or respected to tell the story, to analyse events, to investigate and to bring the major topics to our audiences and readers" (Njoku, Whyte & Vincent, 2018, p.28; Tijani-Adenle, 2019).

Gendered Remuneration and Motivation

Results from a global study of 16 countries (from Africa, Europe and South America) by the International Federation of Journalists (IFJ) in 2012 indicates that male wages exceed female wages in all 16 countries studied, with gender inequalities reflecting even in employee benefits (Central European Labour Studies Institute and Wage Indicator Foundation, 2012). Carolyn Byerly's Global Report cited in Tijani-Adenle (2019) also finds pay gap for women journalists in most of the 59 nations studied (2011) while contributors' analyses of 29 of those countries in her *Palgrave International Handbook of Women in Journalism* (2013) identify pay gap in a good number of the countries (Njoku et al., 2018). Individual researchers have also published findings that corroborate the results of the reports and edited volumes mentioned above. Pay disparity based on gender in Australian and US news media has also been documented. Most of the contributors to Karen Ross and Claudia Padovani's *Gender Equality and the Media: A Challenge for Europe* (2016) also mentions the existence of gaps in the salaries of women journalists across the continent. Although not exhaustive, these studies reflect how research studies from different continents substantiate one another and entrench the reality of wage inequality for women in the global news media (Ross & Padovani, 2016 cited in Tijani-Adenle, 2019).

There is an interesting twist to available information about wage situations in Nigeria. Previous studies have noted that pay disparity does not exist for women journalists in the country's news media. Carolyn Byerly's Global Report cited in Tijani-Adenle (2019) specifically notes that "In Nigeria, women and men journalists are paid equally or, in some cases, women's salaries exceed men's wages" (2011, p.10). Despite this knowledge, the present study investigated the wage situation in the Nigerian news media and found that equality in remuneration is in theory but not practice because factors like negotiation, nepotism and unstructured promotions sometimes create an uneven wage situation (which is open to both genders) but usually favourable to more male journalists. It should be noted that Byerly's study could not unravel the discrepancies since it was a quantitative study and news company representatives

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gave responses based on policy and not practice and they are unlikely to provide problematic information about organisational management to researchers (e.g., see Njoku et al., 2018; (Tijani-Adenle, 2014).

Threat to Women Journalists' Safety and Sexual Harassment

From a global perspective, the number of women journalists threatened, harassed and even killed is steadily increasing (Jamil, 2020a, 2020b, 2019). According to UNESCO, in 2012, women accounted for 4% of the 119 media workers killed; by 2017, this had increased to 14% of the 80 victims recorded that year. In 2018, the percentage was 7%. Furthermore, women account for most cases of sexual violence and online harassment. According to a global study by the International Women's Media Foundation (IWMF) and Troll-Busters, nearly two-thirds of women journalists have been threatened or harassed online and offline, while 26% have been physically attacked. The study, entitled "Attacks and Harassment – The Impact on women journalists and their reporting," reveals that close to 70% of respondents indicated that being a woman was a contributing factor in the attacks (Chocarro, 2019; UNGA, 2017).

As well as physical consequences, these attacks have a major psychological impact. One-third of interviewees reported experiencing physical, mental and emotional trauma following harassment. For freelancers, the situation is even more difficult. Surveys show these women feel even less safe. Consequently, one-third of respondents said they had considered leaving the profession, while more than one-third avoids reporting stories that could put them at risk. Despite these worrying statistics, the Dart Centre for Journalism and Trauma reports that only 26% of the safety training for journalists includes gender-specific considerations, while only 8% of women journalists have been subjected to sexual violence. Just 3% had participated in online harassment training (Chocarro, 2019; North, 2016b).

From the Nigerian perspective, the media seem to function with both voluntary and imposed constraints and biases when reporting gender. Nigerian news media use three adjectives; issue-based, intense news coverage and gender-blind. This gendered orientation, may not be unconnected with the male-dominated nature of the Nigerian media industry. Ndubisi (2010) cited in Dunu (2015) notes that in Nigeria, men produce an overwhelming majority of the messages in the media. By 2000, a staggering 90% of the journalist reporting news in the country's radio, television and newspapers were male. Hence, news selection process and the power to define the media agenda are still a male privilege (Dunu, 2015). Nonetheless, no available records have documented Nigerian women journalists getting murdered, but they face tremendous other safety challenges such as harassment and discrimination (Jibril & Abubakar, 2017).

A study was conducted by Chioma, Okere, Alao, Atakiti and Jegede (2015) with 100 female mass communication students on their perceptions of journalism career considerations and the findings revealed that 54% of them perceived that there are fewer career opportunities for female journalists in the journalism than there are for males. Also, 51% of them believed that family responsibility is a "barrier to career advancement for female journalists" (Jibril & Abubakar, 2017, p.113). Furthermore, 42% of them perceived journalism as a risky profession, 15% of them believed journalists are poorly paid, 10% believed female journalists are discriminated against, % believed women journalists lack insufficient journalistic training and low-level entry (Jibril & Abubakar, 2017).

Nwabueze (2013) cited in Jibril and Abubakar (2017) noted that fewer female journalists exist than males across the world. A cross-continental study of media organisations in Asia, the Caribbean, Europe, Latin America, Middle East, North America and Oceania conducted by Ezeilo (2007) cited in Jibril and Abubakar (2017) revealed that the overall representation of all the female reporters in the world was 31% while males made up 69%. In a study on Africa Ezeilo, cited in Jibril and Abubakar (2017) found

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that only 24% of reporters in both print and broadcast are female. A study of gender representation in the editorial and editorial units of newspapers in Nigeria conducted by Enwefah and Agbalajobi (2011) cited in Jibril and Abubakar (2017) found that only 21% of the newsroom staff are female, only 7% of the editorial staff are female and only 25% of columnists are female.

Theoretical Framework

Gender Role Theory

The theory expounds that gender role predicts differences or similarities between males and females based on the degree of variations in ascribed roles and related evaluations. Gender relations can be analysed from four theoretical perspectives namely, structural-functionalism, biological determinism, conflict school of thought and feminism (Nwosu, 2012). This study is hinged on the Marxist liberal and social feminism perspectives.

Marxists Liberal Perspective

Over time, both overtly and covertly, women have come to be excluded, segregated or marginalised in almost all spheres of life, while men have assumed control of the different sectors as the statutory heads (Chigbu, 2015 cited in Nwosu, 2012). This discriminatory and unjust organisation of the world deprives women the opportunities to maximise their potentials and contribute optimally to the development of their societies (Sarkar, 2006 cited in Nwosu, 2012). This is thus the goal of feminist theorists - to present an approach to understanding the difficult situations and experiences of women in all fields and cultures and to proffer solutions to earn women their true positions in the scheme of things (Njoku et al., 2018; Tijani-Adenle, 2019).

Marxists Social Perspective

Marxist liberal feminism provides a class-based analysis of women's oppression by locating their domination in capitalist systems and private ownership of property (Jaggar, 1983 cited in Nwosu, 2012). It can be argued that this theory applies to the situation of women journalists working for capitalist news media organisations in Nigeria. However, a major deficiency of the theory as it relates to this study is that Marxist feminism is not able to account for how patriarchy is manifest in Nigeria due to the country's peculiar socio-cultural norms which differentiate women's experience of patriarchy compared to those experienced and discussed by Western Marxist feminists. It also seeks to obliterate capitalism, which is the economic system that is operational in Nigeria, hence rendering it inappropriate for the study (Njoku et al., 2018; Nwosu, 2012; Tijani-Adenle, 2019).

Marxists socialist feminism, however, expands Marxist feminism as it identifies more than economic oppression as the basis of women's subjugation in society. Although socialist feminists identify the impact of capitalism on the inferior status of women in society, they are not under the illusion that obliterating capitalism and class struggle will ultimately eradicate gender oppression. Social feminism, therefore, "makes an explicit commitment to the abolition of both class and gender", which are the core challenges that the subjects of this study (women journalists) contend within Nigeria (Jaggar 1983, p.221 cited in Nwosu, 2012).

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MATERIAL AND METHODS

Research Design

Regarding the nature of this study (which involves an analysis of the experiences of the subjects of the study, i.e., women journalists), a qualitative survey approach was adopted, specifically, the interview approach. The interview approach was chosen to understand the experiences of their subjects and because interview provided the researchers with the opportunity to understand, first-hand and in their own words, the participants' experiences (Tijani-Adenle, 2019).

Data Collection Technique, Procedure and Research Location

Semi-structured interview (see Appendix 1 for the interview question guides) was used to gather the original data because it offers the researchers the opportunity to ordinarily ask inquisitive questions in friendly and semi-restricted ways (Bailey, 2008). Several interviews were conducted whenever the researchers could gain access to a subject of the research (a woman journalist) that appropriately fit into his sampling frame. Some of the interviews were conducted after the researchers had begun data analysis while others were performed after the writing of this chapter had commenced and figured it out that gaining information from some group of men journalists would enhance my data analysis (e.g., those who are in top management positions).

A total of 37 interviews were conducted between August and September 2019 in media organisations in Damaturu, Dutse, Gombe and Maiduguri cities located in the states of Yobe, Jigawa, Gombe and Borno respectively. The number of journalists interviewed varied per media organisation as follows: Damaturu, 11; Dutse, 5; Gombe 7; and Maiduguri 12 (also, refer to Table A2-a in Appendix 2). Of the 37 participants interviewed, 10 are men journalists (with some of them occupying various editorial management positions), 25 are women journalists and two are human resource management staff (a man and a woman from NTA Maiduguri and GMC Radio). The longest experience interview with the participants lasted for about one hour 9 minutes while the shortest lasted just 11 minutes. The interviews were completed over a period of two weeks (14 days). Only broadcast journalists and management staff of broadcast media outlets were involved; this is because, in the northern parts of Nigerian where these media organisations are located, women print journalists are extremely scarce.

Sample Frame, Sampling Strategies and Sampling Technique

The emphasis of the sampling frame was chiefly to find both women and men journalists who could provide thorough and detailed information about women's safety-related experiences – how those experiences impacted their personal lives, work, safety and sexual intimidation policies in the news media organisations they work. Hence, the researchers focused on interviewing participants who possessed enough experience in journalism practice and have been working for a substantial time in broadcast news media. Because the present study adopted a qualitative research design approach, the purposive sampling technique was used to select the participants (the women journalists and male and female management staff from the Nigerian broadcast media organisations mentioned in Table A2-a in Appendix 2) who are capable of yielding insights and in-depth understanding (Patton, 2015). The purposive sampling technique was chosen because the researchers were convinced it can help in answering the research questions.

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Most of the men journalists that were interviewed occupied the middle and top editorial management levels and were believed to have possessed tremendous experience in the job. To select the media organisations in which the participants worked, the Typical Case sampling technique approach was adopted. Typical Case sampling technique helps in drawing the sample of participants that are representative (Patton, 2015). Based on the researchers' knowledge, experience and research, all the selected media outlets except for those in Dutse, Jigawa State characterise typical examples of organised and professional Nigerian news media organisations despite nearly all of them are in the north-eastern geopolitical region of the country. Hence, results from the semi-structured interviews conducted from the selected media outlets portrayed findings that may not be assumed to allow for generalisations in any rigorous sense but present a typical analogy of what is obtainable in an average Nigerian broadcast news media organisation.

Research Ethics, Data Analysis and Data Management

The participants were briefed about the problem and aim of the study. All of them verbally permitted to be interviewed and for the information, they provided to be used purposely for the present study. The identities of the participants interviewed were not made public because of ethical reasons. For data analysis, the thematic technique (e.g., see Clarke & Braun, 2013) was used. All the codes identified in the text were scrutinised to ensure that they related to identified codes. All the codes were checked to ensure that each of the identified themes had enough codes to support them devoid of having to jettison codes that were in disagreement with the broad-spectrum of codes that suggested a theme as recommended by Braun and Clarke (2006) cited in Tijani-Adenle (2019). Eventually, three key themes were identified, namely (i) gender discrimination in news management and newsgathering, (ii) gender discrimination in salary, promotion and motivation and (iii) gender discrimination in sexism/sexual harassment.

To simplify data analysis and coding as well as themes identification, a code was designed to identify each participant in the results. Since the interviewees' names and identities were concealed, the data used to design the codes were (i) the type of interview performed, (ii) the interviewee's serial number, (iii) the interviewee's nature of the job or career rank and (iv) the interviewee's gender (e.g., SSI-09-ML-Female) (as shown in Table A2-b in Appendix 2) given that their identities were not disclosed, and that all their names were listed alphabetically and a serial number from 1 to 37 assigned to each. Further, because the interviews were done using smartphones, all the data were captured in digital electronic format. To ensure the security of the data, all were saved (in separate files) in a passworded memory card. Also, all the hard copies of the transcribed data used in data analysis that contained the identities of the interviewed journalists have been destroyed after writing.

RESULTS AND DISCUSSION

Gender Discrimination in News Production and Management

Research Question 1 asks: what are the women journalists' experiences of gender-based safety in the light of discrimination in the Nigerian news media? Including this sub-section, information in the two other subsections that follow discuss provided answers to this RQ.

Past research has argued that women journalists deliberately opt for soft beats because they are more interested in human angle stories while other studies posit that women are sometimes pressured to cover

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soft beats. However, the fact that women journalists possess the capability to cover the hard beats has not been questioned. The journalists interviewed for this study were convinced that women journalists, although clustered in soft beats, can cover hard beats effectively if interested or when given the opportunity. None of the journalists interviewed for this study believed that women journalists are incapable of covering the hard beats. They all believed that women journalists who have covered the hard beats or who are on the hard beats (although relatively few) are very competent. However, most of the respondents did not conceal the 'normed' fact that discrimination exists in news management and administration.

When you uncover the list and names of journalists who have won accolades in the Nigerian media industry as a whole, we females, despite seen as inferior and discriminated against, have garnered a large portion. Even though we cannot deny the obvious fact that the males are larger in population than us in the journalism profession and male news managers and editors always have the prerogative to assign a journalist on a beat of their choice, but in terms of performance, I believe we are doing wonderfully well (SSI-02-J-MM-Female).

It is clear from the views of the respondents presented above that women journalists are, for sure, fewer on the hard beats. However, "this is not as a result of ability", given that the 'few' women journalists assigned to beats are formidably performing well. This probably explains why it has not been put to question, nor engaged with, as it was evident that gender does not inhibit the reporting or editing abilities of women. Apart from assigning women to soft beats because they are seen as emotional and better able to handle soft news, women journalists are also assigned to soft beats by media managers because of "the existence of the perception that women are the weaker sex" (Opoku-Mensah, 2004, p.109 cited in Tijani-Adenle, 2019), they are more vulnerable to violence and editors feel the need to protect them from harm. Women journalists are, therefore, shielded from covering riots, protests, conflicts and other events occurring at sites deemed volatile or dangerous.

I don't think I will ever consider attaching a woman journalist to such a hard beat as, for example, a military formation that is fighting the terrorists in the forest. No, I won't...I feel more comfortable deploying a man to that beat (SSI-35-J/R-MEP-Male).

As a woman, even if I was not assigned on a hard beat I don't mind. I'm used to it. Our societal norms dictate that the males lead in almost everything and journalism is no exception (SSI-03-J-MEP-Female).

Under normal circumstances, the likelihood is for the editor or news manager to tend to stereotype women journalists and deploy them to certain beats. For example, if five male and female reporters are sent to an editor, he would ordinarily consider assigning the males on the more serious beats, then the lighter beats he will say a woman will do better. Women are often assigned to cover fashion, women in development, etc. (SSI-29-J-MEP-Female).

Arguably, shielding off women journalists from hard beats can, ironically, be a blessing in disguise for them because media managers have protected them (women journalists) so well by shielding them from hard beats and "hot spots" to the extent that no woman journalist has been reported murdered in the line of duty in Nigeria (Unaegbu, 2017, p.172), these "hot spots", as Unaegbu in her study on safety in the Nigerian media notes, are "politics, conflicts, elections, news, and sports" (Unaegbu, 2017, p.178).

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"Ironically, if well covered, these are some of the beats that earn journalists a promotion to management and editorial positions" (Tijani-Adenle, 2019, p.106).

Although needed to drive patronage from viewers, listeners and readers as well as the much-needed advertisement revenue, soft news is disdained in the news media. Media managers do not value soft news nor its producers and when promotion opportunities come, writers or producers of soft content are not seen as worthy of being promoted to head the highly rated and revered editorial and management positions.

Gender Discrimination in Salary, Promotion and Motivation

One good thing with Nigerian public news media regarding emolument is that it is difficult for journalists in public news organisations to earn more than they deserve because salaries are strictly based on positions. However, if there is going to be a form of discrimination, it is usually done at the point of employment by, maybe, placing a person in a higher level and grade, compared to what is due to them. However, once journalists are employed and placed on specific levels and steps, they all earn the same salaries, regardless of gender. However, some situations may make male journalists eventually earn more than their women colleagues who join the news companies at the same time, and on the same level despite the claims by media organisations that salary differentials are not based on gender. Certainly, not through a direct policy but due to masculine newsroom cultures which favour male journalists to progress faster than female journalists and get to occupy editorial and management positions (with higher incomes) earlier than females.

You know, the nature of the news organisations is such that things favour the males much more than they do females. So, males are often disposed to work well and garner better chances to get preferential treatments and benefits. If you are working well, they will keep promoting you above someone you came in together, this is not the civil service where they just count years (SSI-10-J-MEP-Male)

That comment shows that journalists who work well and impress management can get an accelerated promotion. While this appears fair, the reality of the circumstances of women journalists, however, is that they hardly ever get a better or fair deal; they are often outperformed by the males whom the news media industry nature and structure favour. For example, marriage and/or family commitments do not usually provide them with the opportunities to enjoy such recognition and promotion because they take time out to cater to their families or nurse children.

Yes, based on policy there is a gender-blind salary scale, especially in public media organisations. If you can rise to certain ranks and positions, you earn the salary for those ranks. This is purely an ungendered matter except if, for example, a female is supposed to be a manager but because of her situation [gender], she is made to be an assistant editor and, therefore, [unfortunately,] earns the salary of an assistant editor because she is not where she should be but basically, the salary is based on the company's salary scale. But that would be unfair to do nepotism in media job (SSI-14-J-MEP-Female).

Well, it doesn't matter the position you are, in most media organisations you earn the same salary regardless of your gender. This is good. Where the difference occurs is, for example, if you and I were both reporters and because you are a man, they would make you become an assistant editor and because I'm a woman, they make me be a correspondent. So, because of that, they will pay you higher than me.

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But it's not like both of us are on the same rank, say, assistant editors and they pay you more than me simply because you're a man (SSI-37-RJ-SM-Female).

The reality with the experiences of women journalists regarding emoluments is such that based on policy, they should equally earn what the men on their levels earn, but masculine newsroom cultures overtake this, and their male colleagues end up earning more than them. This is because the men get promoted to higher positions with more income (due to being on hard beats that earn journalists' recognition and promotion) while the women stay in lower positions with lower income owing to masculine newsroom cultures which undervalue their labour because they have family responsibilities and are on soft beats which do not command recognition and esteem. This can be demoralising for many women. Some will become disinterested and just do the needful to maintain their employment and earn an income – making it less likely for them to progress. Others become frustrated and leave the industry, further reducing the population of women in the news media and thus creating a glass ceiling. Only a few continue to work extra hard and increase their sacrifices on the job until their efforts pay off with recognition and promotion.

Gender Discrimination in Sexism

Incidence of sexism, such as men getting considered or preferred above women and the necessity for them (women) to work "extra hard to prove their competence" constitute an array of examples that the participants mentioned. Sexual harassment generally involves making unsolicited and unwelcomed sexual advances to a woman (or man) physically, verbally or through any other means which is discernible to the harassed (Claudia et al., 2018). It entails unwarranted attention or discrimination based on gender which may also link "academic or professional standing or success to sexual favours or that interferes with work or learning" (Wood, 2011, p.295 cited in Tijani-Adenle, 2019). Global studies have documented sexual harassment against women journalists (North, 2016b; Tijani-Adenle, 2019), with research on Africa showing that although it is rarely discussed, sexual harassment does occur in African news companies (Gadzekpo, 2013 cited in Tijani-Adenle, 2019). The responses ranged from ignorance of the existence of sexual harassment, an explanation that such interactions are consensual to a justification that although acts that seem to constitute sexual harassment may occur, media workers know it is the newsroom culture and they are not targeted at undermining women journalists. The following are the views of those who claim to be ignorant of sexual harassment in the news media or do not think it occurs:

In the newsroom we have adults, I think everybody in the newsroom is above 18. So, the few times they joke...there is nothing in it that harasses the female folk or that tend to smear them (SSI-29-RJ-SM-Female).

Jokes are jokes, that's on a lighter note. I don't see them as a form of sexual harassment (SSI-10-RJ-SM-Male).

As far as sexual harassment against Nigerian women journalists is concerned, there has been a culture of the spiral of silence and defiance in Nigerian and other African news media industries until recent decades. Only recently did African nations and establishments started having legal apparatuses "on sexual harassment and gender discrimination" (Tijani-Adenle, 2019, p.138) neither did Nigerian academia focus on researching the scourge that has been affecting women journalists psychologically,

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socially and professionally in the country. Although issues surrounding sexual harassment, sexism and discrimination are is starting to draw attention, social and political awareness are still inadequate. Insufficient regulations and policies are notwithstanding developing despite suffering unfavourable responses such as "ignoring, denying, trivialising and in extreme cases condoning sexual harassment" from societal culture "thereby protecting perpetrators from sanctions" (Tijani-Adenle, 2019, p.370), for example, as this male respondent notes:

Jokes and senses of humour abound in the newsroom but sexual harassment… this is not common in the media. I don't think I have ever come across it or heard about it. I have never experienced it. So, it's not common. You are the first person telling me that and that is the truth (SSI-01-J-MEP-Male).

Responses like the one above, are surprising and, in a way, shocking. This is because one need not do any covert investigation to uncover evidence of sexually harassing behaviour in the Nigerian media. It is obvious in the jokes, discussions, interactions, as well as in the shared experiences of women journalists. It can be assumed that it would be difficult for someone who has stayed long in the media to occupy a senior editorial position (like the respondent above) to be ignorant of it. It could be because she was speaking as a representative of the organisation and wants to protect the image of her company. Equally, her understanding of sexual harassment may be different, thus making her disregard some sexually harassing behaviours as normal. It is vital to note that even when some female journalists develop the courage to file complaints, media organisations with administrative, editorial and management staff who deny the existence of sexual harassment in the industry are unlikely to address these complaints or give the victims fair hearing.

The young woman who wrote the entreaty against her superior officer was dismissed (SSI-21-J-MEP-Male).

Situations like this show that such organisations are unlikely to do anything to protect their female workers from harassment. Other scholars who have studied how women negotiate sexual harassment in the African news media have arrived at similar findings. Barbara Kaija's research on women journalists in Uganda documents that women journalists 'handle' sexual harassment on their own without recourse to management. She notes how a female journalist left the news media because her editor was demanding for sex and she could not cope with it. Yet, "for personal reasons, she preferred not to take the matter up with management" (Kaija, 2013 cited in Tijani-Adenle, 2019, p. 325). Women journalists working in the global North endure the same fate. Same findings resonate in the United States with only two per cent of respondents in a survey conducted by the Associated Press Managing Editors Association [APME] reporting harassment, and internationally in IWMF's global sexual harassment study with less than one-fifth of the 683 women journalists who had experienced sexual harassment reporting to news management (Barton & Storm, 2014). Women journalists in Nigeria and other international newsrooms (where sexual harassment policies are even entrenched) do not have confidence they would get justice when they report harassment.

For the situation to change, people holding editorial positions need to show more responsibility and the culture of denial must be eradicated in Nigerian and international newsrooms. Incidence of sexism, such as men getting considered or preferred above women and the necessity for them (women) to work "extra hard to prove their competence" constitute an array of examples that the participants mentioned. Furthermore, psychologically torturing experiences such as "not being appreciated like the men, having

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their achievements ignored or even undermined by their superiors because they are women" (De Bruin, 2004; Tijani-Adenle, 2019, p.148) has also been complained by the respondents.

Over the years, some dogged women journalists can develop a thick skin against sexism and sexual harassment.

If a lady finds herself or decides to work in a media organisation...you have signed off that you know that people will harass you and you are ready for it (SSI-02-J-SM-Female).

The comment above is shared by many male journalists in Nigeria and rationalises the persistence of sexual harassment in the country's newsrooms. They seem to think that it is acceptable because it is supposedly a culture of the industry and so see no reason why anyone should complain or refuse to adapt to it. Women journalists have asserted that the newsroom is "not a place for the easily offended" (North, 2016b, p.505) due to the entrenched culture of harassment. This is like Kossan's finding cited in Tijani-Adenle (2019) that sexual harassment endures in male-dominated industries, including the news media because male superiors hold the view that their organisations are part of "unique environments, where sexual harassment can be excused" (p.3). The difference here, unfortunately, is that some women journalists also hold the same views.

In a similar context, many Nigerian women journalists who use social media often get caught in the web of 'flamboyant' self-presentation syndrome where they go berserk sharing their photos and videos with lust-provoking postures and outfits. Comments made by their social male media friends their appearances could be passed for sexual harassment as well. Therefore, to justify what women journalists often point out that "the newsroom is not a place for the easily offended" (North, 2016b, p.505), much sexual harassment and gender discrimination cases against women journalists would go deliberately unreported, self-deniably 'ignored' or ignorantly hushed. These would often make it difficult to draw a conspicuous dividing line between actual sexual harassment remarks and banters.

Sexual Harassment Coping Strategy

Research Question 2 of the study asks: what are the safety coping strategies regarding gender-based discrimination and sexual harassment the women journalists experienced in the newsroom? Information in the following paragraphs provide answers to this RQ.

Despite the seemingly depressing handling of violence against women journalists especially sexual harassment in Nigerian news media, the situation is not all bleak as the resilient woman journalists develop coping strategies to enable them to work despite the irksome masculine newsroom norms. It is vital to note that some female journalists do develop several sexual harassments coping tactics in the newsroom such as developing the courage to file complaints, ignoring, etc. Despite this, however, media organisations and editorial and management staff who deny the existence of sexual harassment in the industry are unlikely to address these complaints or give the victims fair hearing: *They sacked the girl that wrote the petition for writing against her boss (EI-21-RJ-SM-Female).*

During the time I started my career as a journalist...I used to be shocked at the kind of sexy jokes, you know, the insinuations, the connotations and all that… It used to be shocking, but it shocked me into silence. Once they just make jokes that make me uncomfortable, I would just keep quiet or leave the

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place. It took me some time before I got used to it. I don't like teasing people as a person; so, such sexy jokes don't go down well with me despite I now know how to resist it (SSI-02-J-SM-Female).

Over the years, since joining journalism career, I have developed a thick skin. It is either I don't respond or if I don't like it, I just keep the quiet or just smile, or I just generally don't participate in such jokes. So, of course, for a young woman like me who's just coming into the newsroom, you'll find the jokes harassing, if I can use that word, you'll find the jokes can make you feel uncomfortable (SSI-21-J-R-RJ-Female).

Apart from sexist jokes, women journalists also have to endure inappropriate touches all in the name of interactions. Many male journalists ignore the discomfort of their colleagues, (especially junior colleagues) and go-ahead to touch them even when the women show their discomfort. Amidst the outcry over rampaging sexism in the newsroom, a woman journalist out of the 37 interviewed said that she had experienced sexual harassment and she fought it, noting that it stopped after reacting to three occurrences from different men.

One day, I got so angry over somebody doing such unspeakable things to me. I had to slap him in the newsroom. I don't want to mention the place. I was walking into the studio for a pre-recorded show; I was already dressed and made up and everything and I was going. Then the guy he was like "gosh, you're so cute, babe," and he squeezed my thigh. The next thing I knew was I had slapped him. And everybody was like, 'Oh! You slapped a man', and I was like, 'Oh yeah, and so what? I'll do it again if he does it again' (SSI-21-J-MM-Female).

This is a typical case that shows that such organisations are unlikely to do anything to protect their female workers from harassment. Other scholars who have studied how women negotiate sexual harassment in the Nigerian news media have arrived at similar findings. Cited in Tijani-Adenle (2019), Barbara Kaija's research on women journalists' documents that women journalists 'handle' sexual harassment on their own without recourse to management. She notes how a female journalist left the news media because her editor was demanding for sex and she could not cope with it. Yet, "for personal reasons, she preferred not to take the matter up with management" (p.325).

Furthermore, women journalist's coping strategies to being touched without their consent were to ignore the unwanted physical contact and pretend it was not happening. One of the interviewees says, *I take my mind off it (SSI-15-J-MM-Female*). In such situations, women journalists isolate themselves socially to reduce the frequency of unwanted touch by, e.g., *I reduce the number of people I talk to* (*SSI-17-J-MM-Female*) as a respondent explains. This response is like Kaija's record of Nigerian women journalists who "ignored" in most cases "sexist language and inappropriate touches" from male journalists (p.325). Tijani-Adenle's study on the status of women journalists in Nigerian news media also records how women journalists who had experienced harassment "changed their behaviour around others, including not making eye contact, not attending work social functions (when the harassment occurred in the workplace) and not forming friendships with anyone related to work. Several women said they have modified the way they dress for work or try to present themselves as personally conservative" (2019, p.27).

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FUTURE RESEARCH DIRECTIONS

Future research should employ quantitative approaches to determine the rates of discriminations and gender-based abuses in the Nigerian new media industry. This chapter believes that the significance of applying a conceptual framework based on the African Feminist approach to the research process and its implications on the findings must be highlighted. African feminism, considering the history, culture, governance and level of development in Nigeria provides the structure that exposes important and peculiar challenges that women journalists encounter in the country – like irregular wages, unfair wage differentials and inadequate infrastructural facilities, absence of gender equality, sexual harassment and maternity policies. Hence, future research should explore this approach. Finally, future research should also explore the perception and perspective of women journalists' media colleagues on discrimination against them in the media.

CONCLUSION

The atmosphere and culture in the Nigerian news media industry largely portend unsafe experiences, gender-based discrimination and abuses such as sexual harassment, sexism and gender-based nepotism against women journalists. Nonetheless, although some media organisations ignore the existence of such gender-based abuses as well as discrimination and unsafety in the newsroom to the extent that they expect journalists to protect themselves, other journalists and media management personnel admit the existence of such abuses and discriminations to the extent that they make efforts to control them. Unfortunately, most media organisations lack any policies and frameworks which take initiatives to manage abuses and discriminations among members of staff based on gender and seniority; only a few organisations manage to have some forms of policy-like guidelines. This situation forces determined women, journalists, to resort to adopting somewhat 'risky' behaviour as coping strategy and resilience measures.

The overarching socio-cultural patriarchy in Nigerian regulates or strongly moderates how sexual harassment and sexism issues are handled, with most women journalists (who constitute most of the victims) seldom complaining and senior personnel management staff fancying to address reported complaints secretly and privately. Generally, the backlash and stigma that come with speaking out or reporting complaints about gender-based discriminations and abuses such as sexual harassment and sexism have sealed women journalists' mouths to speak out. Often, personal and unofficial means of addressing such issues like praying for the victim, seeking advice on how to avert future occurrence and sometimes, resigning are resorted to; hence, giving rise to an unsafe environment for affected women journalists who opt to stay while threatening others to flee the industry. Regrettably, victimised women journalists (those who have experienced discrimination and abuse) hardly get the recognition and support they need and deserve from their female colleagues who luckily did not experience such challenges. They either wish their colleagues' sad experiences away because they did not experience harassment themselves or expect them to 'grow up and handle it' within the "existing structures of patriarchy rather than challenge the structures themselves" (Ross, 2004, p.146 cited in Tijani-Adenle, 2019, p.172).

In conclusion, after interviewing 37 journalists of different career ranks and two human resource managers (a man and a woman), this chapter can confidently say that an array of professional unsafety targeting women journalists such as gender-based discrimination and abuses including sexual harassment and sexism do exist in the Nigerian news media but, unfortunately, are not regarded as such because most

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women and men journalists have internalised them to the degree that such "anomalies have become the norm" (Palm & Marimbe, 2018, p.27). This chapter believes that skyrocketing rates of unemployment and unfavourable economic atmosphere are some of the key factors contributing toward the vulnerability of early- and mid-career journalists especially women, who fall prey to men 'predators' some of whom sometimes turn out to be their bosses and other senior colleagues. The findings also demonstrate that unsafe experiences such as sexual harassment and gender-based discrimination within the Nigerian news media industry cannot be understood separately from other types of gender discrimination in society. Finally, professional unsafety in the light of gender-based discriminations and sex-related abuse meted against women journalists in the media can be mitigated through gender-sensitive legislation and advocacy that will require news media organisations to have policies and frameworks to address such issues with stiff penalties for defaulters.

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KEY TERMS AND DEFINITIONS

Gender-Based Discrimination: An unofficial administrative attitude and practice covertly showing preferential treatment to women journalists because of their gender (sex).

Gendered Journalism: A newsroom culture that is influenced by overarching patriarchal societal norms, preferring men for juicy news beats, perquisites, etc. over women.

Journalist Safety: The ethically and socio-culturally guaranteed absence of psychological and physical harm toward journalists at work or otherwise.

News Media: Media organisations (whether broadcast, print or online) that primarily deals in news production and dissemination.

Newsroom/Newsroom Practices: A newsroom is a typical journalism practice environment or setting in a particular news media organisation where colleagues meet and work together. Newsroom practices are traditional and normed journalism practices commonly seen in a typical newsroom or newsroom setting, for example, news writing and editing, assigning news beats, interaction between male and female colleagues, etc.

Sexism/Sexual Harassment: A behaviour, an action or utterances suggesting sexual or sex-related activity, for example, kissing, touching/squeezing breasts/buttocks, blowing kisses, making sounds with the moth suggesting kisses, or possible of arousing sexual urges, etc.

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APPENDIX 1

Semi-Structured Interview Guides

These are question guides; follow-up questions were asked. Source: Tijani-Adenle (2019, pp.267-268).

Semi-Structured Interview Guide for Women Journalists

1. Tell me about your journalism career; how you got in, when and why?
2. How would you describe the role and position of women in your organisation's newsroom?
3. Are there aspects of working in the newsroom that are gendered or is it a gender-blind newsroom?
4. How do you navigate your personal life as a woman with that of a journalist?
5. How would you describe the newsroom culture in your organisation regarding professional journalists' safety?
6. Does your organisation have gender equality policies on remuneration, maternity leave, sexual harassment and other similar policies? Have you used any of these policies or do you know anyone who has? What implications do they have on the status of women in the news media?
7. How have you been balancing work and life? Which comes first? What do your husbands/families think about your career?

Semi-Structured Interview Guide for Male Journalists/Managers

1. Tell me about your journalism career; how you got in, when and why?
2. How would you describe the role and position of women in your organisation's newsroom, especially regarding safety to work?
3. Are there aspects of working in the newsroom that are gendered or is it a gender-blind newsroom?
4. How would you describe the competence and status of women journalists as a media manager and/or colleague?
5. How would you describe the newsroom culture in your organisation, especially regarding safety to work?
6. Does your organisation have gender equality policies on remuneration, maternity leave, sexual harassment and other similar policies? Have you used any of these policies or do you know anyone who has? What implications do they have on the status of women in the news media?
7. Studies and industry data have confirmed glass ceilings for women journalists in Nigeria, do you agree and what factors do you think are responsible for this?

Semi-Structured Interview Guide for Human Resource Managers of News Organisations

1. What do you do and how long have you been here?
2. I'll like to know the organisation's employment policy as regards to gender. Do you just employ the best or is there any arrangement in place to ensure that there are equal numbers of males and females?

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3. Is salary structured; do people negotiate for their salaries when they are getting employed; and is it possible for people in the same position or doing the same job to earn the same salary?
4. Are women journalists given preference for training, or is this gender-neutral?
5. What is your maternity leave policy? How is it implemented?
6. Do you have a sexual harassment policy? Has any member of staff made official complaints? How are issues of safety and sexual harassment handled?

APPENDIX 2

Table 1. Frequency and gender distribution of the participants per media organisation (N=37)

Participants Interviewed in Media Organisations in Damaturu, Yobe State						
Media organisation	YBC		YTV		NTA Damaturu	
Number and gender of participants	Male 2	Female 3	Male 1	Female 3	Male 0	Female 2
Total	*11 (3 male, 8 female) journalists*					
Participants Interviewed in Media Organisations in Dutse, Jigawa State						
Media organisation	JRC		Freedom FM Dutse		NTA Dutse	
Number and gender of participants	Male 0	Female 3	Male 0	Female 1	Male 0	Female 1
Total	*5 (female) journalists*					
Participants Interviewed in Media Organisations in Gombe, Gombe State						
Media organisation	GMC Radio		GMC TV		NTA Gombe	
Number and gender of participants	Male 1	Female 2	Male 1	Female 2	Male 1	Female 1
Total	*7 (3 male, 4 female) journalists*					
Participants Interviewed in Media Organisations in Maiduguri, Borno State						
Media organisation	BRTV		Dandal Kura Radio		NTA Maiduguri	
Number and gender of participants	Male 2	Female 3	Male 2	Female 3	Male 2	Female 1
Total	*12 (5 male, 7 female)*					

Note: FM = frequency modulation radio; GMC = Gombe State Media Corporation; JRC = Jigawa State Radio corporation; NTA = Nigerian Television Authority; TV = television; YBC = Yobe Broadcasting Corporation; YTV = Yobe State Television.

Source: Authors

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Table 2. Codes of identifying interviewees

S/No	Data Category	Data Type	Code of Data
1	Type of interview	Semi-structured interview	SSI
2	Type of job/Career rank	Human resource manager	HRM
		News production staff	NPS
		Journalists/Reporter	J/R
3	Interviewee's Ranks	Lower ranks (e.g., reporters, journalists, news production assistants)	LR
		Middle management Staff (e.g., news editors, senior correspondents)	MMS
		Senior management staff (e.g., Heads of reportorial, chief news producers)	SMS
		Management and editorial positions (e.g., Administrative Managers, Head of News, Online News Editor, Manager News/Programmes, General Manager	MEP

Source: Adapted with modifications from Tijani-Adenle (2019, p.95)

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Chapter 100
Resident Physician and Medical Academic Faculty Burnout: A Review of Current Literature

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ABSTRACT

Physician burnout finds its roots in both undergraduate and graduate medical education and has emerged as an important cause of academic faculty turnover. Recognition of the need for resiliency training has led to the development and implementation of wellness programmes throughout the country and world. This chapter examines the causes and potential solutions of combating resident physician and academic faculty burnout in medical education. The authors reviewed current literature on wellness programmes in medical education, including both traditional and curricular approaches and provide a template for creating a well-rounded wellness programme to promote resident physician and academic faculty wellness.

INTRODUCTION

With the pressure of caring for patients, one can understand the importance of physicians maintaining good health, physically and emotionally. However, physician burnout is alarmingly prevalent in the current day with anywhere from 25%-70% experiencing the 'emotional exhaustion, depersonalisation and decreased feelings of personal accomplishment' (Eckleberry-Hunt, Van Dyke, Lick, & Tucciarone, 2009). At one time, burnout has been present in 'one-third to one-half of US medical students and academic faculty' and also been observed with the same prevalence throughout the world in countries such as Japan, New Zealand and Canada (Benbassat, Baumal, Chan, & Nirel, 2011). When dissected, it is clear that physician burnout finds its roots in both undergraduate and graduate medical education.

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BACKGROUND

When examining undergraduate medical education, two unique classifications of burnout predispositions have been studied: exogenous stressors and endogenous stressors. Exogenous or environmental stressors include 'adjustment to medical school, student abuse, witnessing and unwillingly participating in unethical behaviour towards patients and exposure to death and suffering' (Benbassat et al., 2011). Of note, the endogenous stressors were often related to qualities identified in one's personality such as neuroticism and contentiousness.

People who chose the field of medicine are often concrete thinkers and interested scientists, looking for evidence to evaluate the strength of a concept. Incoming students are often not prepared for the uncertainty that lies within medicine, so students struggle with an 'intolerance of uncertainty' also known as a 'perception of ambiguous situations as a threat' often comes as an endogenous stressor. Three different types of uncertainty have been described in literature (Benbassat et al., 2011). The first and most common is an uncertainty of one's personal adequacy; students were concerned that they would not learn all they needed to know to be a successful physician. This uncertainty can also be manifested in the competitiveness associated with undergraduate medical education, though newly addressed with curricular changes (Benbassat et al., 2011; Slavin, Schindler, & Chibnall, 2014). The other two uncertainties concerned the limitation of available medical knowledge and lastly, the uncertainty resulting from being unable to distinguish between the other two uncertainties (i.e. uncertainty of personal adequacy and limitation of one's medical knowledge) (Benbassat et al., 2011).

Naturally, when examining graduate medical education (residency), life satisfaction was the lowest and prevalence of mental health problems was the highest within the first year. In fact, 76% of new doctors reported high levels of burnout. Yet again, with a global impact, it was observed that 30% had anxiety symptoms and 15% had depressive symptoms in Switzerland. In Canada, 14% reported they would change specialty and 22% would not pursue medicine if given the opportunity to relive their career (Benbassat et al., 2011). Interestingly, physicians who attended medical school outside of the United States reported lower emotional exhaustion and depersonalisation (essentially, burnout) than United States medical graduates (Eckleberry-Hunt et al., 2009). The reason for this difference is that the general work culture in the United States is thought to be more stressful than other parts of the world due to a variety factors and when it comes to medical training, work hours are more restricted in other countries compared to the United States (Gander, Briar, Gardner, Purnell, & Woodward, 2014). Regardless, given that thousands of new doctors graduate each year, the magnitude of those statistics is astounding. Due to significant variation in schedules as well as the health of patients, certain specialties such as intensive care, emergency medicine and oncology result in lower life satisfaction (Benbassat et al., 2011). Unmet expectations provide a new stressor to new doctors once formal medical education is completed and they are finally practicing. Sometimes, being inexperienced, some new physicians are discovering that the practise of medicine may not reflect what was expected upon applying and entering medical school. To dig deeper in unmet expectations, these doctors also face discrepancies between what is learned in school and what is experienced in practise. These discrepancies revisit and even confirm the stressors of personal inadequacy as mentioned in undergraduate medical education stressors. Overall, personality issues, such as pessimism, perfectionism and lack of coping skills for stress, persist as one common theme in the development of burnout (Eckleberry-Hunt et al., 2009).

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Medical students and doctors have higher rates of substance abuse, anxiety, depression and suicide, which are all effects of burnout (Eckleberry-Hunt et al., 2009). With such high rates of burnout and its sequelae, medical education administration is currently paying more attention to wellness programmes, especially considering that physician burnout leads to lower quality patient care (Eckleberry-Hunt et al., 2009). In that sense, physician burnout could very well be considered a public health problem with huge implications for our society's health. Because of those implications, it is now imperative that administration and medical students are educated in the variety of ways to which wellness can be incorporated into medical education and the culture of the institution.

The aim of this chapter is to educate the administration of undergraduate and graduate medical education about the necessity of creating and promoting a wellness culture amongst the health professionals-from medical student to faculty responsible for training future doctors. The chapter includes a review of current data on wellness programmes and pull from these programmes tenets of strong components needed to develop wellness programmes. The review of the literature contains both traditional and curricular approaches, in order to provide a guideline and template for a well-rounded wellness programme. The availability of a template would give widespread access to administration, allowing them to implement programmes in their institutions with ease. With implementation of wellness programmes throughout the country and world, medical education, the health profession and doctors can further ensure the health of communities by ensuring the health of the physicians in those communities.

MAIN FOCUS OF THE CHAPTER

Wellness Programming Across All Levels of Medical Education

Undergraduate Medical Education Wellness Programs

In 1991, the Kirksville College of Osteopathic Medicine launched its pioneering wellness programme, responding to a need that only 20% of current allopathic and osteopathic medical schools had addressed (Gaber & Martin, 2002). The medical school adopted 'I am my own first patient' as the theme of their programme, a very timely and accurate call to action that still applies to all physicians today. The programme is a voluntary initiative that promotes wellness in multiple areas such as physical, environmental, emotional, intellectual, social, spiritual and professional. As of 2002, there were several benefits associated with participation in the programme, including extra points towards the final grade in a course, free aerobic classes, pre-participation physical examination and 6-month fitness assessment. The latter two still exist today. The programme also boasted benefits for mature and older students; second year students could gain clinical experience by performing pre-participation assessments and also learn how to write a 'fitness prescription' and wellness programmes for incoming first year students. The Still Well programme, an earlier model of best practises, still exists today with large participation of the students each year, as previewed from the growth of 41 of the 290 students in 1991 to the 268 of the 290 students that participated in 1998. A strong connection between changing the grading system and lower student anxiety was noted specifically, on the topic of the extra points towards the final grade in the osteopathic theory and methods courses. Comprehensive seminars were provided to the students ensuring participation would yield higher overall scores (Gaber & Martin, 2002). Considering a large amount of stress in medical education comes from academics itself, an investment in wellness as a means to improve grades

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in any one course is a sound idea. For example, seminar series topics included: diversity in medicine, interpersonal relationship building, test-taking anxiety, high performance nutrition and resume writing. One unique aspect of the Still Well programme was the emphasis on physical health and the access to resources to aid and assess the students' physical health. The pre-participation physical examination was administered within one month of arrival to the school; physical fitness was then re-evaluated at 6 and 12 months. The physical examination was rather comprehensive and included the traditional components of the actual physical examination with vitals, height/weight screening, vision examination and measurement of blood lipid levels. However, the examination had unique components including screening for cardiovascular risk (through waist-to-hip ratio) and cancer as well as resting electrocardiograms and pulmonary function tests. The Still Well programme offers a comprehensive approach to wellness, based on the very simple principle of a 'first patient', yet, targeting burnout in students from physical health to emotional health and everything in between.

Traditional wellness programmes often rely on the individual to seek out improved access to counselling resources and encourage a wellness-focused lifestyle (Slavin et al., 2014). One unique and recent approach, launched at Saint Louis University School of Medicine in 2009, focused on addressing the curriculum in order to 'balance out the negative aspects of medical education' and ensure healthier individuals (Slavin et al., 2014). The first change instituted was the change of the grading system from a 4 -level grading system to pass/fail, a change to which many medical schools are now adhering. The proposed change aimed to decrease competition for grades and reduce overall stress. In addition, it gave students the liberty to focus on topics that they personally found important as opposed to focusing on learning high volume of material at once. Secondly, there was a reduction in course work to allow for participation in other aspects of the wellness programme including learning communities and longitudinal electives. The electives were expanded so that students had access to them during majority of the first and second years of medical school. The electives gave students more time to explore interests, including service and research, as well as. foster relationships with faculty.

Mentorship and generally relationships with faculty who also advocate for wellness has been shown to be an effective method in maintaining wellness in students (Eckleberry-Hunt et al., 2009). Another aspect of the Saint Louis University wellness programme included five specialised learning communities as mentioned-service and advocacy, research, global health, wellness and medical education-which would give interested students and faculty an avenue to share common interests with one another (Slavin et al., 2014). The communities were aimed at tailoring new electives, developing innovative lectures, identifying faculty mentors and expanding service and research. To enhance the breadth of the curriculum, the administration added a resilience and mediation programme to one of the courses which provided sessions on habits from mindfulness cultivation to character strengths to aid students individually. The Human Anatomy course, the most stressful of the first year, was moved to later part in the year, as opposed to the beginning of the year when students already face high levels of stress adjusting to the rigor. The examinations schedules were altered essentially to set students up for higher scores. Lastly, yearlong social events were implemented for medical students; this programmatic change is common across medical education and proves to be highly beneficial for the students and residents. The programme yielded significant decreases in depression and anxiety of students progressively through the years starting from the year of implementation. Another added benefit was the increase in the mean scores of the major licensing examination taken in the preclinical years. Saint Louis University's programme proved that a successful wellness programme must integrate all aspects of medical education, from curriculum

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to social atmosphere, in order to change the culture of the institution. Overall, this curricular approach, though novel, proves to be promising for medical education in years to come.

Graduate Medical Education Wellness Programmes

As described above, prevention interventions like stress management workshops, mindfulness meditation, and wellness curriculums have had documented positive impact on medical education. However, treatment options are important for those who develop significant levels of depression or suicide risk. In one institution, residents and faculty who participated in an anonymous screening of their mental health were more likely to accept a referral to community based counselling after receiving personalised communication (Moutier et al., 2012). The high rates of burnout among resident physicians suggest a significant number would benefit from therapeutic counselling. The United States Accreditation Council for Graduate Medical Education requires that all residency programmes provide psychological services for residents. Barriers to accessing these services include concerns about confidentiality, accessibility, and potential reporting to licensure boards (Givens & Tjia, 2002; Guille, Speller, Laff, Epperson, & Sen, 2010). While higher education is associated with more positive attitudes to counselling (Vessey & Howard, 1993), depressed individuals are often concerned about the risks of treatment (Kushner & Sher, 1989).

Improving the understanding of motivators and barriers to seeking therapeutic help by residents is important in the development of wellness programmes and outreach efforts. Research documents the fact that female physicians are less likely to seek counselling (Dunn, Moutier, Hammond, Lehrmann, & Roberts, 2008), (Moutier et al., 2009) which is concerning given female medical students and residents are at greatest risk to report significant stress compared to their male counterparts. There is limited evidence supporting whether ethnic or racial differences exist within the pool of physicians that seek counselling. Evidence suggests that residents are more comfortable seeking an academic medical centres counselling services rather than an employee assistance programme (Pitt, Rosenthal, Gay, & Lewton, 2004) and typically rate these services as satisfactory (Dabrow, Russell, Ackley, Anderson, & Fabri, 2006). Lowering the barriers to accessing these services would be an important step by any medical training programme.

In a single institutional study, residents and fellows were surveyed to determine differences in perceived barriers and receptiveness to accessing on-site wellness programmes (Ey, Moffit, Kinzie, Choi, & Girard, 2013). The researchers hoped to determine if residents were willing to seek counselling on-site and identify potential barriers. A plan to stratify by demographic information to help identify targeted interventions was a part of the study. The Resident Wellness Programme at Oregon Health Science Centre implemented the access of what was the equivalent of a full-time psychologist or psychiatrist experienced in working with medical professionals available 5 days a week to its residents (Ey, Moffit, Kinzie, Choi, & Girard, 2013). The services were free, unlimited, not documented on the hospitals' electronic medical record, and health insurance information was not obtained. Moreover, resident physicians were told that the 'wellness counselling' was not reportable to medical licensing boards. The Oregon Health Science Centre found that most residents knew how to access the resident wellness programme (88%) and only 13% were 'not at all likely' to access the programme.

Time was the biggest barrier for most resident physicians and female physicians were the most concerned about taking time off to access the programme. These findings demonstrate that even when the barriers of cost and knowledge of available counselling services was removed, a culture may exist among residents that limits the ability to take a break off to address personal health needs. Addressing critically troubled resident physicians that may be concerned about the consequences of seeking treatment is of

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the utmost importance. The same institution, Oregon Health Science Centre, expanded on the results of an earlier study which found that 90% of the residents cited the inability to get off work during business hours as the major barrier to seeking care (Cedfeldt et al., 2015). In July 2010, the institutions' Division of Graduate Medical Education implemented a time off policy that required residency training programmes to provide four half-days off per academic year for health care and wellness. The programme directors were made aware of the policy and the programmes were strongly discouraged from tracking the residents' reasons for use of the policy. The intent of the programme was that directors would assign time off for all residents, this planning was included in a pre-scheduling of each resident's time off allotment.

Upon review of the outcomes of the strategy, it was reported that two years after the policy was instituted almost 90 percent of residents knew about the policy but only 49 percent of resident physicians had actually used it. The majority (73%) of those who took a half-day reportedly used it for preventive health services (Cedfeldt et al., 2015). The most common concern by residents was that their absence during wellness day would impact their peers' schedule (Cedfeldt et al., 2015). Pre-scheduling these days off may have decreased the impact of these barriers and also ensuring that the scheduled days off were provided on rotations where patient care transfers are not necessary.

The impact of residents not seeking wellness days even when assigned means that residents may seek other forms of self-help, some of which are not beneficial. Older literature has looked at patterns of substance use over multiple specialties and found that daily alcohol use was reported in 5% of respondents (Hughes, Conard, Baldwin, Storr, & Sheehan, 1991). Conventionally, anaesthesiology residents are thought to be at highest risk due to proximity and access to potential drugs of abuse (Lutsky, Abram, Jacobson, Hopwood, & Kampine, 1991). Emergency resident physicians are also thought to be at high risk due to shift work patterns of high stress followed by long periods of rest (Hughes et al., 1991). A 2008 large scale study of emergency medicine resident physician substance use and impairment, the researchers found an increasing number of residents reporting substance use as 'self-treatment' or to 'relieve stress' as compared to a similar study done in the early 1990s (McBeth et al., 2008). Paralleling this finding was the significant increases in marijuana use and 73.6% of the marijuana users report using it in order to 'relieve stress'. A large number of residents indicated that the consumption of alcohol increased during residency. One of the more concerning findings of this study was the quantity of residents who initiated substance use during residency, especially those using prescription drugs in a nontherapeutic way; this is another interesting finding that came out of this study and is one that it should make educators rethink the way stress and substance abuse is managed during residency. It also serves as important reminder that simply providing more 'time off' does not equate to 'less stress'. However, time off, especially scheduled time off is an important factor in the successful identification and treatment of an impaired resident.

Time off alone does not create a more resilient resident. Stress management or resilience training may be an important step to mitigate some of the factors that lead to resident burnout. During the period from 2012-2013, Duke University Family Medicine, Psychiatry and Anaesthesiology residents participated in two or three 1 hour sessions of mindfulness-based resilience activities (Goldhagen, Kingsolver, Stinnett, & Rosdahl, 2015). The group sessions were developed by a clinical psychologist and held during protected resident time. The learners were taught about the concept of mindfulness-awareness, meditation, value exploration, and cultivation of positivity. Resident physicians were asked to complete an anonymous survey prior, afterwards, and during a 1-month follow-up of the meditation based training. The survey contained questions that came from the Depression Anxiety Stress Scale, Oldenburg Burnout Inventory, and the Mindful Attention Scale. Results of the survey showed that residents, at baseline, had normal levels of stress, with females having significantly higher levels than males (Goldhagen et al., 2015).

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Residents had a very good awareness of when they were stressed and a majority of residents had findings suggestive of a high level of burnout based on the Oldenburg Burnout Inventory. In the short term, the mindfulness intervention, did not affect these stress level but, a trend was observed on later, when residents scored positively time points of lower burnout and stress scores. These results suggest that the residents may have used the new knowledge to ease future stress and become more resilient. Resilience training is not a new concept.

Other research groups have studied stress reduction training during residency. One group looked at the outcomes of medicine and paediatric residents who received resilience training as compared to a group of residents that did not receive such training. The researchers found that the group that was trained had noted improvements in emotional exhaustion and depersonalisation scores (McCue & Sachs, 1991). Another research group found a positive effect on emotional exhaustion when residents were taught a meditation practise which combined breathing and repetition for reducing stress (Ospina-Kammerer & Figley, 2003).

Along the lines of graduate medical education, Troy Family Residency programme started a structured and more 'traditional' wellness programme in 2003 (Eckleberry-Hunt et al., 2009). This programme provided tangible evidence-based results that medical education and administrators can use to develop solid wellness programmes. These points provide a framework useful towards the development of a comprehensive wellness programme template that can be implemented throughout the world. Most importantly, choosing a definition of wellness from which a medical or residency programme would function is critical in the design process. While many examples or definitions of wellness exists, the Troy example considered 'wellness' to be more than a lack of impairment. Instead it was 'a dynamic and ongoing process involving self-awareness and healthy choices resulting in a successful, balanced lifestyle' (Eckleberry-Hunt et al., 2009). Along the pathway of creating a wellness programme, a critical first step was to select a faculty wellness champion per incoming class of residents. To share the responsibility of leading the programme, it would be ideal to have multiple champions especially for larger programmes or larger classes of medical schools. The responsibility of the wellness champion is to 'ensure that wellness is incorporated into the daily operations of the residency programme' (Eckleberry-Hunt et al., 2009). The use of technology may be useful in sending out articles and reminding students/residents and faculty about wellness meetings. Another important component of the programme, which should be key in an ideal wellness programme, is the administration of a 'burnout tool' twice a year. This approach was also used in the Saint Louis School of Medicine programme as students were surveyed twice a year (once in the beginning, once at the end of the year) to determine their anxiety and depression levels in relation to the interventions put in place' (Slavin et al., 2014). The burnout tool used at the Troy programme and across many wellness programmes is the Maslach Burnout Inventory (Eckleberry-Hunt et al., 2009). The inventory measures the definition of burnout, as mentioned above, on a qualitative scale of low to high. Further study and expansion of this inventory could become a reliable measure of burnout and effectiveness of interventions.

Other interventions of note include providing lectures on wellness and burnout as well as writing a mission statement for the wellness programme. Across the undergraduate and graduate levels of medical education, it would be beneficial to provide 'difficult patient' panels twice a year to discuss how to manage difficult situations and interactions as a group. To ensure accountability, 'wellness partners' can be assigned between faculty and students or residents, in order to establish wellness goals: emotional, physical, spiritual and social goals. Lastly, like many programmes, bringing the classes together

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socially, especially to celebrate accomplishments, always proves to foster healthier and happier students and residents.

The Stanford University Department of Surgery's Balance in Life programme was a response to the loss of one recent graduate to suicide in 2010. The goals of the programme were clearly defined as 'help residents cope with daily stress, provide tools to manage challenges after completing residency and reduce the risk of burnout, depression and suicide' (Salles, Liebert, & Greco, 2015). For professional well-being, the programme created a resident mentorship programme where junior residents are allowed to choose their senior resident mentors; the pairs are then funded via the administration's budget to have quarterly lunch meetings. The idea of this mentorship, a continuous and effective theme amongst thriving wellness programmes is that it provides an informal setting where both parties can talk about personal stressors as well as it gives junior residents someone 'older' who can provide guidance. Another aspect of fostering professional well-being was actually building in physical activities in the schedule to encourage leadership and team building, the ropes course or a maze are examples of activities in this area.

Upholding physical well-being during residency, one example, to bolster healthier eating options for residents, especially on nights and weekends is to offer healthy options. To address this issue, an example of what one programme did was to provide a refrigerator that would be properly and consistently stocked with healthy food options. To address psychological well-being, the programme had an expert clinical psychologist meet with residents weekly on a confidential basis. Consistency was built into the schedule to allow the psychologist to meet with the different classes of residents every 6 weeks. Lastly, to address social well-being, there are programmes or activities available outside of the hospital that encourage life beyond the hospital and give the residents an opportunity to support each other and interact socially. The Balance in Life programme is an exemplar of direct and concrete policies to address wellness on different levels of training during medical education.

Academic Medical Faculty Wellness Programmes

Academic medical faculty face increasing pressure and challenges in their work environments (Goitein, 2014). Faced with higher clinical load and pressures to increase clinical productivity, coupled with the desire to be fully committed to teaching and research. The loss of autonomy at work can create a sense of disenfranchisement and diminished sense of meaning. One study found that faculty who spent less than 20% of their time on an activity that is most meaningful to them had higher rates of burnout and the ability to focus on the aspects of their work that brought meaning diminished the risk of burnout (Shanafelt et al., 2009). A 2006 study that surveyed 3,519 academic faculty members at four United States medical schools found 20% of faculty had significant levels of depressive symptoms, with higher levels in younger faculty. Noted in this research is a major relationship between work-related strain and faculty mental health and job satisfaction (Schindler et al., 2006).

Professional vitality battles burnout and builds resilience. Job satisfaction and engagement are important keys to vitality (Dankoski, Palmer, Laird, Ribera, & Bogdewic, 2012). Faculty vitality has been defined as 'the high levels of satisfaction, productivity, and engagement that enables [a] faculty member to maximise her/his professional success and achieve goals in concert with institutional goals' (Dankoski et al., 2012). Another group of researchers determined that faculty who find meaning in their work create that sense of professional vitality and it is important for Academic Health Centres to pay more attention to strengthening relationships, improving the misalignment between faculty and institutional values,

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and improving work–life integration (Pololi et al., 2015). Presently, few training programmes exist that document positive outcomes related to enhanced academic faculty well-being.

A group at Rochester, New York studied whether an intensive educational programme in communication, mindfulness, and self-awareness is associated with improvement in physicians' well-being, psychological distress, burnout, and capacity for relating to patients. The intervention included an 8-week intensive phase (2.5 hour/week and a 7-hour retreat) was followed by a 10-month maintenance phase (2.5 hour/month). The physician's participation in a mindful communication programme correlated with short-term and sustained improvements in well-being and attitudes associated with patient centred care (Krasner et al., 2009).

In 2011, Mayo Clinic Rochester academic physicians were enrolled in a pilot randomised study. In the study, the intervention group received 90-minute training on Stress Management and Resiliency training (Sood, Prasad, Schroeder, & Varkey, 2011). During the intervention groups' time, participation in facilitated small group conversations with peers which concentrated on learning how to use mindfulness and reflection strategies. Moreover, a statistically significant improvement was found for resiliency, perceived stress, anxiety, and overall quality of life compared to the non-intervention group. A group of researchers later expanded this intervention to involve 19 biweekly facilitated physician discussion groups that included features of mindfulness, reflection, shared experience, and small-group learning for 9 months (West et al., 2014). The doctors received protected time, 1 hour of paid time every other week, for their efforts and thus removed the barrier of having to find time in already busy schedules. A compelling finding from the study revealed that the rates of depersonalisation, emotional exhaustion, and overall burnout decreased substantially in the trial intervention stage of the research (West et al., 2014). These optimistic results were sustained up to 12 months after the study.

Such findings from evidenced-based research hold important implications for administrative and department leadership at academic medical centres. The academic physician is a critical resource for these centre of training, scientific discovery, and medical innovation. It can be inferred, that diminishing burnout and increasing resilience are important for long term success of academic health centres and reduction in employee turnover. Academic health centres that encourage faculty mindfulness may help inspire a culture of support for the humanistic needs of health professionals (Pololi et al., 2015).

Increased awareness of these issues affecting the mental health and well-being of medical academic faculty once proactively addressed should ultimately also positively affect students and resident physicians. Thereby, advancing policies to help facilitate an atmosphere that is essential for research productivity, effective teaching and quality patient care.

SOLUTIONS AND RECOMMENDATIONS

The key recommendations on all levels of medical education include an internal review of existing institutional culture surrounding wellness and identifying areas for improvement. Wellness champions and mentors need to take transformative steps with an early introduction of wellness to the medical audience and consider administering self-assessment burn-out tools to aid in monitoring impact of the interventions rendered. Structured wellness events can be incorporated in the form of lectures, retreats, social events and counselling. Most importantly, structures need to be put in place to reduce the barriers (money, time, etc.) that prevent medical learners and medical faculty from accessing these solutions and recommendations. Academic health centre also need to incorporate into the institution's mission statements, policies

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that promote a culture of wellness assistance for all members of the medical and medicine communities. Inclusive of faculty, staff, administrators, medical students, residents and physicians.

By reviewing current data on wellness programmes, including both traditional and curricular approaches, this chapter concludes with a table created to provide a guideline and template for building a well-rounded wellness programmes. Table 1 presents a summary of current programmes that have been tested and proven successful in fostering wellness among its medical students and residents. Additionally, Table 1 may serve as a template for administration attempting to address burnout within their respective institutions. With this template, one can use key factors to customized wellness programmes to essentially change the culture at each institution for years to come.

FUTURE RESEARCH DIRECTIONS

Medical educators should continue to study the impact that learning environments have on the well-being of their students and resident physicians. Conscious efforts to educate themselves on the consequences and costs associated with these settings is imperative. Using existing knowledge and offering more evidence- based research can be helpful in garnering public support and awareness. Examination of outcomes on various levels (patient, health care delivery, health care cost) and engagement with the multitude of stakeholders in the area to develop informed guidelines is needed. Best practises need to be studied and implemented in a consistent mode for wellness programmes on all levels of medical education from the beginning medical student to more senior academic faculty. To have successful academic reform in medical schools, it therefore would be beneficial to assess and manage occupational burnout among clinical faculty members. Little research has been conducted to investigate role stress experienced by faculty members in medical schools in developing countries. This becomes even more important when the process of reform in medical education has already taken place in many first world countries. Research to understand the impact of academic faculty on physician and resident research is most needed as changes to policies throughout medical education are on the rise.

CONCLUSION

Stress, burnout and lack of vitality in medical training is prevalent. It is certainly not a new problem, but more attention is being paid to its effects on the quality of patient care, learner mental health and faculty turnover. Most importantly, the culture of medicine needs to change. Lack of resiliency on the faculty level spills down to resident and medical student learners and does not model good behaviour. However, it is the authors' hope that as more medical student and resident learners are given the tools they need to combat burnout, they, in turn, will then develop into more vital medical faculty.

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Table 1. Wellness programme template

Key Factor of Programme	Support
Internal review of curriculum • Change from level grading system to Pass/Fail • Evaluate 'hardest' courses/rotations and discuss ways to alleviate the stress. Can the order of courses be rearranged? • Incorporation of wellness curriculum (meditation, mindfulness, self -reflection)	Slavin et al., 2014
Prepare for arrival of new class • Delve into new student's interests & career goals to match with student mentor and faculty advisor • Send personalised letter prior to arrival	Drolet and Rodgers, 2010
Introduction of wellness at orientation • Educate on common stressors, realistic expectations for programme, student/resident abuse • Invite established faculty who have faced various forms of distress • Define 'wellness'; expand on 'I am my own first patient' • Administer burnout tool; follow up at 6 months	Gaber et al., 2002 Eckleberry-Hunt et al., 2009 Benbasset et al., 2011
Emphasize mentorship & advising • Faculty mentors • Student/resident mentors • Consistent check ins throughout the year • Confidential space for students/residents to vocalise concerns • Wellness champion	Eckleberry-Hunt et al., 2009 Drolet and Rodgers, 2010 Slavin et al., 2014 Salles et al., 2015
Student leadership & investment • Wellness committees focused to tackle different aspects of wellness	Drolet and Rogers, 2010
Lecture series addressing wellness • Meditation/Yoga • Time management • Financial management • Nutrition • Sleeping habits • Diversity in medicine	Eckleberry-Hunt et al, 2009 Goldhagen, Kingsolver, Stinnett, & Rosdahl, 2015
Designated pre-scheduled wellness days/retreats	Cedfledt et al., 2015 Drolet et al., 2010
Measure physical health • Physical examination and extensive studies done upon arrival with fitness at assessment 6 months	Gaber and Martin., 2002
Scheduled social events • Welcome reception • Colleges & 'College Cup' • Sporting events/ art events • Celebrate milestones (transitions in years, birthdays etc.)	Gaber and Martin., 2002 Eckleberry-Hunt et al., 2009 Drolet and Rodgers, 2010 Slavin et al., 2014 Salles et al., 2015
Breaking wellness down into domains • Mind • Body • Social • Community • Professional	Drolet and Rodgers, 2010 Salles et al., 2015
Reduce barriers to accessing behavioural health care • Offer referrals to community based counselling services • Provide free & easy access to full-time psychologist or psychiatrist experienced in working with medical professionals	Moutier et al., 2012 Ey, Moffit, Kinzie, Choi, & Girard, 2013 Salles, Liebert, & Greco, 2015
Provide time off during weekdays/business hours to ensure time for residents/faculty to seek proper health care & promote overall wellness	Cedfeldt et al., 2015

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KEY TERMS AND DEFINITIONS

Academic Medicine Centres: A health care organisation often connected to a medical school and hospital system.

Burnout: Physical or mental collapse caused by overwork or stress.

Difficult Patients: Patients who are troublesome, tedious and/or noncompliant with medical provider instructions.

Intolerance of Uncertainty: A perception of ambiguous situations as a threat (Benbassat et al., 2011).

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Mindfulness: A mental state achieved by focusing one's awareness on the present moment, while acknowledging and accepting one's feelings, thoughts, and sensations; it is often used as a therapeutic technique.

Resident Physician: A resident physician or house officer is an individual who has completed medical school. A resident physician practices medicine under the supervision of an attending physician. In many countries, a physician must successfully complete residency training before they can fully practice medicine. Post-residency physicians are referred to as attending physicians or consultants.

Resiliency: The ability to recover quickly from disruptive change without being overwhelmed or acting in harmful ways.

Value Exploration: Process in which individuals examine their values, beliefs, motivations, interests and abilities to help guide education and career decisions.

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Chapter 101
(Non)existent Laws of Workplace Cyberbullying: Limitations of Legal Redress in a Digitized Market

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ABSTRACT

This chapter chronicles the legislative and jurisprudential history of workplace bullying and analyzes new frameworks for applying employee harassment laws to the digital era. Part I considers the sociolegal underpinnings of workplace harassment found in Title VII of the 1964 Civil Rights Act. The authors discuss how Title VII and its legal progeny gave way to "hostile work environment" claims. Part II discusses leading U.S. Supreme Court precedent, the creation of an affirmative defense for employers, and the limitations of that defense, including those developing in state and local jurisdictions. Part III discusses prevailing solutions and raises questions not yet addressed in the legal literature. Findings reveal that American jurisprudence is ill-set to protect or compensate workers injured by bullying—either cyber or physical.

INTRODUCTION

Swedish psychologist Heinz Leymann conducted the first serious academic inquiry into workplace bullying, or what he called "workplace mobbing," in the late 1980s (Leymann, 1990; 1996). This seminal research brought bullying out of the scholastic context and shed light on the psychopathological ramifications of organizational harassment (Nolfe et al., 2007). Workplace bullying has since become an interdisciplinary focal point in fields ranging from occupational health (Quine, 2003), to epidemiology (Einarsen & Skogstad, 1996), to management research (Branch et al., 2013). Topical scholarship

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proliferated concurrently with the development of new media. The effects of bullying are generally thought to be amplified through electronic forms of contact for two reasons (Campbell, 2005; Dooley et al., 2009; Tokunaga, 2010). First, the public and anonymous natures that digital bullying pose make people perceive online bullying as worse than in-person bullying (Sticca & Perren, 2013). Second, the ubiquitous nature of new media allows workplace interactions, and by extension harassment and bullying, to extend "beyond the office's 'four walls'" (Gelms, 2012, p. 259). This ubiquity provides bullies with ample time and resources to target victims (West et al., 2014).

Legal scholarship, however, has been slow to study the effects of workplace cyberharassment (West et al., 2014). The recent codification of school bullying laws, promulgated by the out-of-classroom reach new media have on student-to-student interactions, is strengthening the workplace anti-bullying movement and societal acceptance of anti-bullying legislation generally (Bloom, 2007). As state legislatures begin to codify school bullying laws, advocacy groups are successfully building support for workplace anti-bullying legislation. Yet while 29 states and two territories have introduced workplace bullying legislation, no proposal has been codified into law (Workplace Bullying Institute, n.d.-a).

Furthermore, workplace harassment research is rejecting the plaintiff-centered narrative that legal protection from workplace bullying necessarily harms the employer's financial interests. This is not a zero-sum relationship. The law and economics literature, heavily influenced by organizational and industrial psychology, is recognizing adverse ramifications bullying has on human and economic capital (Einarsen et al., 2010). Workplace bullying may lead to individual psychological damages, impaired interpersonal relationships, and third-party distress—for which harmed workers may seek recourse in tort action (Martin & LaVan, 2010). Victim demoralization, in turn, leads to environmental toxicity, which diminishes corporate productivity and organizational efficiency (Vega & Comer, 2005). Thus, the psychological effects that workplace bullying has on an employer's financial situation likely outweighs the potential economic ramifications that workplace bullying legislation would put on industry (Yamada, 2010).

The relationship between workplace bullying and the law has become increasingly complicated. Present common law and statutory remedies provide inadequate redress because such online harassment falls outside the bounds of "traditional workplace harassment" (Coletta, 2017, p. 450). Current harassment law has several key limitations (Paul, 2015). First, legal remedies are only available to harassment occurring in certain protected settings, such as a physical workplace or school. Second, the law assumes that the harassment and resulting harm occur in the same protected setting. With the advent of virtual business and digital communications, the bounds of the workplace have become increasingly blurred such that bullied workers have been unable to find legal recourse for harms occurring wholly or partially online (Franks, 2011).

In sum, workplace harassment has lagged behind the proliferation of digital media. Current legal frameworks necessitate that bullying occur in physical settings, such that cyberharassment often precludes bullied victims from obtaining legal redress. This chapter chronicles the legislative and jurisprudential histories of workplace bullying and analyzes new frameworks for applying cyberbullying laws to the digital era. Part I begins with the legislative underpinnings of workplace harassment found in Title VII of the 1964 Civil Rights Act, which forbids employers from making employment decisions based on employees' race, color, religion, sex, or national origin. The authors discuss how Title VII and its legislative progeny gave way to "hostile work environment" claims articulated by the U.S. Supreme Court in *Harris v. Forklift Systems, Inc.* (1993). Part II discusses the leading Supreme Court precedent on workplace harassment law: *Burlington Industries, Inc. v. Ellerth* (1998) and *Faragher v. City of Boca*

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Raton (1998). These two cases jointly created an affirmative defense for employers who show (1) an exercise of reasonable care to prevent and correct harassing behavior and (2) a plaintiff unreasonably failed to take advantage of preventative opportunities provided by the employer. The Court narrowed the definition of "supervisor" later, in *Vance v. Ball State Univ.* (2013), limiting the types of workers who could transfer liability to their employers. Importantly, the rise of social media has obfuscated the *Faragher/Ellerth* defense because an employee's work environment no longer fits the purely physical definition on which this line of jurisprudence was constructed.

Part III discusses prevailing solutions and raises questions not yet addressed in the legal literature: Is the "patchwork of statutory and common law measures governing discrimination" (Yamada, 2013, p. 400) a sustainable way to deal with workplace bullies? Should employers be vicariously liable for harassment by supervisors, even if the harassment occurs online and offsite (Gelms, 2012)? Should website operators and Internet service providers be held liable for creating hostile online environments (Norby-Jahner, 2009)? Could corporations use school district liability for cyberbullying as a template for managing online harassment (Coletta, 2017)?

PART I: REGULATORY FAILURES

Problem Identification

Workplace bullying has recently come to the forefront of American social consciousness. Excellent interdisciplinary research in psychophysiology (Djurkovic et al., 2003), organizational psychology (Zapf & Einarsen, 2001), and occupational health and safety (Law et al., 2011; Vie et al., 2011) highlight the ramifications of unredressed mobbing. Reduced productivity, increased attrition, high rates of absenteeism, poor customer relationships, and increased medical costs due to work-related stress make bullying a concern not just for victimized employees but also for their fiscally minded employers (Bassman, 1992; Yamada, 2000). The American Psychological Association estimates that U.S. companies lose $300 billion per year on account of the foregoing issues—bullying alone costs employers $19 billion in lost employment and $3 billion in decreased productivity (Daniel & Metcalf, 2016). Amplifying these social and economic implications is workplace bullying's pervasive nature. According to a 2014 survey commissioned by the Workplace Bullying Institute and conducted by Zogby Analytics, 37 million U.S. workers report being subjected to "abusive conduct" (Namie, 2014). That is to say, 27% of Americans have suffered abusive conduct at work, and 21% have witnessed it directly. Of that group, 7% are experiencing abusive conduct in their current jobs. The majority of bullies are men (69%), and the majority of victims are women (60%). Women bullies disparately target other females (68% of cases), making incidences of woman-on-woman bullying disproportionately high. And based on positive correlative evidence between workplace bullying and manifestations of physical health symptoms (Djurkovic et al., 2003), mobbing remains a critical issue. Yet despite well-established primary health effects and secondary economic costs, no state has passed legislation directly related to workplace bullying (Workplace Bullying Institute, n.d.-a). Lacking a clear, legislative route to redress, bullying victims are forced to seek recourse under traditional theories of tort recovery. Tort law, however, is ill-equipped to address mobbing. And, as demonstrated with a sample of cases below, bullying-type behavior, despite serious physical, psychological, and economic implications, does not usually rise to the level of extreme and outrageous conduct that plaintiffs must establish to prove their case (Yamada, 2004).

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Intentional Infliction of Emotional Distress

In the absence of topical legislation, victimized employees most commonly seek redress under one of the following theories of recovery: *intentional infliction of emotional distress* (IIED) and *intentional interference in the employment relationship* (IIER) (Yamada, 2004). Courts, however, dismiss the vast majority of these claims because plaintiffs are unable to proffer sufficient evidence to satisfy their evidentiary burdens. IIED requires plaintiffs to prove, by a preponderance of the evidence, that an actor engaged in *extreme and outrageous* conduct, by which the actor *intentionally* or *recklessly* caused a victim to suffer *severe emotional distress* (Restatement (Second) of Torts § 46 (1965)).

Definitionally, workplace bullying falls outside the scope of IIED for three reasons. First, and most apparently, bullying does not usually rise to the level of extreme and outrageous conduct required to meet IIED's first prong (Burga de las Casas, 2018). The American Restatement of Torts (Second), the topic's seminal legal treatise published by the American Law Institute, notes that conduct becomes extreme and outrageous if it goes beyond the bounds of human decency or if a civilized society would regard it as atrocious and utterly intolerable. Common insults, indignities, annoyances, petty oppressions, and rude and insolent conduct do not constitute extreme and outrageous conduct for purposes of establishing IIED: "[P]laintiffs must necessarily be expected and required to be hardened to a certain amount of rough language, and to occasional acts that are definitely inconsiderate and unkind. There is no occasion for the law to intervene in every case where some one's feelings are hurt" (Restatement (Second) of Torts § 46 cmt. d.).

Second, bullied plaintiffs are unable to establish severe emotional distress. Emotional distress rises to a sufficient level of severity when a reasonable person of ordinary firmness could be expected to endure under the circumstances. Thus, if an employee similarly situated to a victim of workplace bullying is expected to endure the distress, the victim is precluded from recovery. There is, however, a deep-seated legal expectation that bullied employees tolerate less-than-savory conduct from their coworkers. In the paradigmatic example *Harris v. Jones* (1977), a staple of every first-year law student's torts casebook, plaintiff William Harris sued his supervisor and their company, General Motors, in Maryland for harassment due to the supervisor's relentless badgering and mocking Harris regarding his lifelong stutter. Harris suffered throughout his life with this speech impediment, and he had been treated for a nervous condition for six years prior to the start of the harassing behavior. A trial court originally found in favor of Harris, calling the actions of the supervisor "malicious" and "cruel," but the verdict was overturned on appeal, and the appeal was upheld by the state's high court. The court said that for Harris to recover under the emotional distress tort, he must prove four elements consistent with the Restatement's requirements: "(1) The conduct must be intentional or reckless; (2) The conduct must be extreme and outrageous; (3) There must be a causal connection between the wrongful conduct and the emotional distress; (4) The emotional distress must be severe" (*Harris v. Jones*, 1977, p. 565).

According to the court, Harris had not proven the fourth element of the IIED test: that the emotional distress was sufficiently severe. As the Court of Appeals (despite its name, the highest court in Maryland) put it, "That element of the tort requires the plaintiff to show that he suffered a *severely* disabling emotional response to the defendant's conduct" (*Harris v. Jones*, 1977, p. 570). Mere humiliation and insults would not suffice, even if, as the court said, the harassment was cruel and insensitive. Most jurisdictions seem to require some objective indication that a plaintiff's stress was truly severe: e.g., socioemotional problems, insomnia, loss of appetite, or episodes of crying (see *Santino v. Columbus Pub. Sch.* (2011) for an example, in which the court listed "traumatically induced neurosis, psychosis, chronic depression, and

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phobia" (pp. 801-802) as potentially severe enough). And this high evidentiary burden comes on top of a current jurisprudential movement away from imposing IIED liability (Segrist, 2011; Zipursky, 2010).

Third, disagreements in the social science literature on whether to consider a bully's hostile intent, and the victim's perception thereof, when defining workplace bullying (Hoel & Cooper, 1999) complicate a plaintiff's ability to bring a successful action in IIED. At common law, a plaintiff may bring an IIED suit for harm arising from an actor's intent or recklessness. The Restatement defines recklessness as disregard of a high degree of probability that emotional distress will follow some course of conduct (Restatement (Second) of Torts § 46 cmt. i.). Whereas American sociolegal scholarship considers intent to be a definitional feature of workplace bullying (Saunders et al., 2007), European scholarship does not—positing that a requisite showing of malice makes workplace bullying difficult to classify and empowers perpetrators with undue veto power over whether their actions should constitute bullying (Einarsen et al., 2010). The American Psychological Association defines bullying as the *intentional* and repeated aggressive behavior that causes another person injury or discomfort (American Psychological Association, n.d.). The Workplace Bullying Institute, in contrast, defines bullying as the repeated, health-harming mistreatment of one or more persons, using at least one of the following methods of abusive conduct: threatening, humiliating, or intimidating behavior; work interference/sabotage; or verbal abuse (Workplace Bullying Institute, n.d.-b).

With a lack of scholarly consensus over whether bullying should require intent, bullied plaintiffs are unable to base their IIED assertions in grounded scientific methodology. American courts, certainly, are not beholden to the social science community when passing judgment. Even if experts consolidate their viewpoints into a singular mobbing matrix, judges are not required to adhere to scientific best practices. The issue of disparate scholarly understandings regarding the definitional aspects of workplace bullying results in patchworks of legal responses and unpredictable applications of law. Social science ambiguity, to an extent, causes courts to undermine mobbing's seriousness and complexity. Because the concept has not fulsomely solidified out of scholarly suspension, courts have downplayed the gravitas of harm suffered.

For example, courts do not typically permit plaintiffs to bring expert witnesses on bullying or their expertise into harassment trials to help juries understand the definitions and extent of the victim's experience. In one case (*Kearney v. Orthopaedic & Fracture Clinic, P.A.*, 2015), a Minnesota appeals court left intact a district court's decision not to allow Dr. Gary Namie (a researcher and anti-bullying advocate discussed below as one of the proponents of the Healthy Workplace Bill) to testify as an expert on bullying on behalf of the plaintiff. The trial judge's rationale: "workplace bullying 'is not a new or novel concept' and it is 'not beyond the understanding of a trier of fact'" (*Kearney v. Orthopaedic & Fracture Clinic, P.A.*, 2015, p. 10). Unlike rape or battered-woman syndrome, the details of which would not, said the judge, be experienced or understood by an average person, bullying is far more common, and an expert witness would not be necessary to help the jury understand it.

In an earlier Indiana case (*Raess v. Doescher*, 2008), the defendant objected to Dr. Namie's testimony labeling him a workplace bully. He claimed that the "bully" label was both "junk science" and prejudicial to the jury; and moreover, Dr. Namie did not have the requisite qualifications to be considered an expert. The state trial judge ordered the jury that the issue of "workplace bullying" was not the issue on which it should focus but allowed Dr. Namie's testimony. While the judge did not exclude the testimony, and the appellate court upheld that decision (largely on procedural grounds, saying that the issue had not been preserved for appeal), the decision was not unanimous. One appellate judge thought that the defendant was correct: Dr. Namie's testimony lacked definition of the term "bullying" and sufficient context to

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the case at hand, so as a result "the 'workplace bullying' label is nothing more than highly prejudicial name-calling of no help to the jury" (*Raess v. Doescher*, 2008, p. 801). Cases like these demonstrate the difficulty of introducing expert testimony into trials where the common wisdom is "everyone knows about bullying."

Until the academic community can coalesce around a clear definition, judges will continue to prevent expert witness testimony and plaintiffs will continue to have difficulty establishing IIED's constituent elements. From a jurisprudential perspective, including intent within workplace bullying's definitional parameters would benefit injured plaintiffs twofold. First, an intent-based characterization would conform to IIED's scienter requirement and ease plaintiffs' evidentiary burdens. Second, a unified social science approach would give credence to mobbing's psychosocial ramifications, bolstering a jury's need to hear from expert witnesses. Taxonomical or methodological ambiguity generally precludes expert witness testimony because the trial judge reasons a lack of community acceptance or scientific validity—both of which are within her gatekeeping powers (*Daubert v. Merrell Dow Pharmaceuticals, Inc*., 1993). Thus, making intent a requisite feature of workplace bullying will assist injured workers in their abilities to call witnesses and win damages.

In sum, IIED has been an unsuccessful avenue to pursue workplace bullying. As a matter of policy, American tort law presumes that plaintiffs should be able to withstand harsh verbal criticism. While there has been theoretical indication suggesting that common law is on the cusp of incorporating workplace bullying into the IIED framework (Morris, 2016; Wood, 2014), courts are unwilling to blur the line separating severe, emotionally disturbing conduct from harsh verbal aggression. Without some additional factor such as bullying on the basis of race or ethnicity, or deliberately targeting or exploiting a person's vulnerability or sensitivity, plaintiffs are left without recourse. And while some of the aforementioned definitional nuances and psychological aspects of intent exceed the scope of this chapter, it is important to understand the geographical and cultural distinctions because they directly affect the legal landscape and help explain why American courts and legislatures have lagged behind their European counterparts with respect to workplace bullying initiatives (Öke & Yücetürk, 2005; Yamada, 2004).

Intentional Interference in the Employment Relationship

IIER is another possible, yet unlikely, mechanism of tort remediation for harms suffered resulting from workplace bullying (Calvin, 2012). Under IIER, a defendant-supervisor who improperly interferes with a plaintiff-employee's contractual relation is entitled to recover from the pecuniary harm resulting from loss of the benefits of the relation if the employee can prove (1) the existence of a business relationship, (2) the defendant knew of the relationship, (3) the defendant intentionally and maliciously interfered with the relationship, and (4) the defendant's conduct directly caused the plaintiff's damages (5 A.L.R.4th 9).

To mount a successful workplace bullying claim under IIER, a plaintiff must show that her supervisor's abusive conduct was so far outside the scope of his employment relationship, with both the plaintiff and the employer, that the supervisor should be considered a third party as a matter of law (Glynn et al., 2015). Courts, however, are split on whether current employees qualify as "third parties" necessary to invoke this doctrine (Yamada, 2005). And some courts expressly prohibit workplace bullying recovery under IIER under the theory that supervisor-bullies cannot interfere with an employment relationship that they are necessarily part of. Because of its limited application and strict party-based requirements, IIER, like IIED, provides an insufficient legal basis for recovery from workplace bullying.

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The Occupational Safety and Health Act

Tort law's failure to adequately address workplace bullying has led some victims to seek redress under two main statutory frameworks: the Occupational Safety and Health Act and Title VII of the Civil Rights Act of 1964. Following the 1970 codification of the Occupational Safety and Health (OSH) Act, Congress created the Occupational Safety and Health Administration (OSHA) with the purpose of providing "every working man and woman in the Nation safe and healthful working conditions and to preserve our human resources" (Occupational Safety and Health Act, 29 U.S.C. § 65 1(b) (1970)).

The law places the onus on employers to mitigate "recognized hazards that are causing or are likely to cause *death or serious physical harm* to employees" (29 U.S.C. §654(a)(1) (emphasis added)). Based on the statute's plain language and underlying policy, it is not suited to address workplace bullying for the following reasons. Substantively, the OSH Act was intended to mitigate grievous workplace injuries stemming from manual labor (Glynn et al., 2015). OSHA has been largely successful in that respect; over the past 40 years, workplace deaths have dropped by nearly 30% (Occupational Safety and Health Administration, n.d.). Yet the bill's sponsors did not intend for the legislation to cover verbal abuse, work interference, or other threatening interpersonal behavior associated with mobbing. Procedurally, the requirement of "serious physical harm" almost always precludes bullied workers from OSHA-based recovery. Even if bullying rises, or should rise, to a level that satisfies OSHA's high evidentiary burden (Harthill, 2011), under-staffed and underfunded OSHA officers would be hesitant to add a new bullying-dimension to their enforcement mechanisms (Yamada, 2013). Furthermore, bullied employees depend on OSHA attorneys to bring suit because the OSH Act does not grant private rights of action (Yamada, 2000). An economically frugal government agency is unlikely to risk the financial and human resources pursuing a legal claim outside the definitional parameters of the act on which the agency is based. Finally, the law neither incentivizes employers to protect employees nor penalizes them from failing to do so (Calvin, 2012). The lack of carrots, sticks, and government resources make OSHA an unlikely avenue to pursue workplace bullying.

Title VII of the Civil Rights Act of 1964

The second main statutory framework under which bullied workers typically seek redress is Title VII of the Civil Rights Act of 1964. Title VII is the legal foundation upon which modern American workplace protection is built. Unlike European countries' statutory emphasis on workplace dignity, which seeks to right sociohistorical inequities rooted in medieval feudalism (Friedman & Whitman, 2003), America's legalistic approach stems from institutionalized racism founded in chattel slavery (Morris, 2016).

Precipitated by the 1960s civil rights movement, and the newfound lens through which American society began to perceive segregation and systemic racism, the Civil Rights Act served as omnibus legislation designed to mitigate discrimination in voting, education, public accommodation, and employment (U.S. Equal Employment Opportunity Commission, n.d.-b). Title VII, specifically, makes it illegal for employers to "discriminate against any individual with respect to his compensation, terms, conditions, or privileges of employment, because of such individual's race, color, religion, sex, or national origin" (42 U.S.C. §2000e-2(a)(1)&(2)). In an era of conspicuous inequality and ethnic bigotry, Title VII served to address invidious discrimination based on membership to a protected group or class (Yamada, 2010). Over time, Title VII has been successfully applied to less-conspicuous forms of discrimination including behaviors related to interpersonal conflicts, workplace abuse, disability, and stress (Stefan, 1998). Col-

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lectively, courts label this type of nonnormative workplace behavior as "harassment." As discussed below, harassment reaches the requisite level of illegality when it becomes a condition of continued employment, or the conduct is so severe or persuasive as to create a work environment that a reasonable person would consider intimidating, hostile, or abusive (U.S. Equal Employment Opportunity Commission, n.d.-a).

Workplace harassment has two categorical requirements to become actionable under Title VII. First, the abusive conduct itself must meet an objective threshold clarified by case law. Petty slights, annoyances, and isolated incidences of bullying do not typically meet this benchmark. Second, the harassment must be founded on membership in some protected class. Despite Title VII's categorical expansion to include prejudice based on pregnancy (Donohue & Siegelman, 1991) and disability (Schwab & Willborn, 2002), harassment only becomes actionable when grounded in a victim's protected group membership (Yamada, 2010). Absent a clear nexus between the hostile act and one or more of the immutable characteristics statutorily or judicially defined, harassment cannot be relieved through Title VII or any state statutory equivalent (Harthill, 2008).

Yet Title VII has become the principal legal instrument through which workers seek bullying-related redress. This is because, as previously noted, the majority of bullied workers are women (60%), the majority of workplace bullies are men (69%), and male perpetrators prefer targeting women (57%) more than targeting other men (43%) (Namie, 2014). While bullying and sexual harassment are not synonymous, these gendered statistics allow plaintiffs to make out colorable arguments that the bullying they suffered is on account of their sex. And while bullying may not be an independent and cognizable action under Title VII, the bullying, if sufficiently severe or pervasive, may become grounds for recovery under a Title VII "hostile work environment" claim (*Ramseur v. Perez*, 2013).

Title VII and its Progeny

As shown above, a female-bullied majority, combined with deficient tort and legislative remedies, has precipitated legal action under Title VII, despite precluding from recovery victims who do not belong to a protected class (Flores, 2019). The chief effort to correct these shortcomings is the proposed Healthy Workplace Bill (HWB), promulgated by Professor David C. Yamada and Dr. Gary Namie of the Healthy Workplace Campaign. Yet the proposed bill is founded on principles drawn from Title VII and its progeny (Yamada, 2010). Thus, it is necessary to walk through key Title VII cases pertaining to gender-based harassment in order to understand the current and future legal landscape of workplace bullying.

Hostile Work Environments: Litigation

In *Williams v. Saxbe* (1976), the U.S. District Court for the District of Columbia became the first federal court to grant a right of action for sexual harassment by recognizing prurient quid pro quos as a form of workplace discrimination under Title VII (Coletta, 2017; Gelms, 2012). Diane Williams, a public information specialist employed at the U.S. Justice Department, refused a supervisor's sexual advance. After being rejected, the supervisor began a pattern of mistreatment including unwarranted public reprimands, refusal to consider Williams' work-related proposals and recommendations, refusal to recognize Williams as a competent professional, and refusal to give Williams adequate notice of her work obligations. Williams' Employment was terminated in September 1972. The court found in Williams' favor, holding that a male supervisor's retaliatory actions, taken because a female employee declined his sexual advances, constitutes sex discrimination within the definitional parameters of Title VII. The

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court reasoned that the supervisor's behavior created an "artificial barrier" to employment for female employees and granted William's motion for judgment.

In *Meritor Savings Bank v. Vinson* (1986), the U.S. Supreme Court held in a 9-0 decision that sexual harassment resulting from hostile work environments is violative of Title VII. In 1974, Michelle Vinson began working as a teller-trainee at a branch office of Meritor Savings Bank. Over a four-year course of employment, Vinson received several promotions and became assistant branch manager. The fact that Vinson's promotions were based solely on merit was undisputed. During the course of her employment, Vinson's immediate supervisor, Sidney Talor, a Meritor vice president, made a series of sexual advances. Vinson initially refused but eventually yielded out of fear of losing her job. She alleged that Talor fondled her in front of other employees, exposed himself to her at work, and forced her to have sex 40 or 50 times during and after business hours. Vinson neither reported the harassment to Talor's superiors nor filed an official complaint with the bank. In denying her allegations, Talor argues that Vinson's accusations originated from a business dispute. The federal district court judge ruled for the defendants, holding that if Vinson and Talor did have a sexual relationship, it was voluntary, had nothing to do with her continued employment at the bank, and that therefore Vinson was not the victim of sexual harassment. The U.S. Court of Appeals for the District of Columbia reversed in favor of Vinson, holding that the district judge applied the wrong legal standard and should have precluded the "voluminous testimony regarding Vinson's dress and personal fantasies," which the employer offered as a defense (*Meritor Savings Bank v. Vinson*, 1986, p. 63). The appellate court also identified two distinct categories of sexual harassment actionable under Title VII: harassment directly linked to the grant or denial of economic benefits (*quid pro quo*) and harassment that, while not affecting economic benefits, creates a hostile or offensive working environment (non *quid pro quo*).

The U.S. Supreme Court, speaking through Justice William H. Rehnquist, affirmed the intermediate appellate court's holding that sexual harassment allegations under Title VII may include hostile work environment claims and are not limited to tangible loss of an economic character. "[C]ourts have uniformly held, and we agree, that a plaintiff may establish a violation of Title VII by proving that discrimination based on sex has created a hostile or abusive work environment" (*Meritor Savings Bank v. Vinson*, 1986, p. 66). The Supreme Court prescribed the correct legal inquiry for determining sexual harassment: whether sexual advances by a superior are unwelcome by the employee, not whether the employee's participation in the sexual activities is voluntary. Furthermore, the sexual harassment must be sufficiently severe or pervasive to alter conditions of the victim's employment and create an abusive working environment.

In *Harris v. Forklift Systems, Inc*. (1993), the U.S. Supreme Court established a standard for the type of severe or pervasive harassment that a plaintiff needs to show in order to recover under a hostile work environment claim under Title VII. Teresa Harris worked as a rental equipment manager at Forklift Systems, Inc. for over two years. During her tenure with Forklift, Harris was routinely subjected to gender-driven verbal insults and sexual innuendo by company president Charles Hardy. Harris quit and filed suit on the basis that Hardy's behavior created a hostile and abusive work environment in violation of Title VII.

The Supreme Court affirmed its holding in *Meritor* that hostile work environment claims are actionable under a Title VII theory of sexual harassment/discrimination. Reaffirming the "severe or pervasive" standard set forth in *Meritor,* the court clarified that sexual harassment must meet objective and subjective elements. A plaintiff must show that (1) she personally perceived the work environment to be hostile and that (2) a reasonable person in the same position would perceive the environment to be hostile. Looking at a supervisor's behavior under the totality of the circumstances, a plaintiff establishes these standards

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through a requisite showing of frequent and severe abusive conduct that is physically threatening or humiliating and that unreasonably interferes with the employee's work performance.

Importantly, the justices held that a plaintiff need not show psychological harm to establish a hostile work environment. She must only show that a reasonable person in the plaintiff's position would find the harassing behavior sufficiently offensive. It is into this legal environment that the Supreme Court introduced in 1998 a defense for employers seeking to avoid liability for supervisors' alleged harassment of their employees.

PART II: EMPLOYER LIABILITY: THE FARAGHER/ELLERTH STANDARD

In two landmark companion cases (*Burlington Industries, Inc. v. Ellerth*, 1998; *Faragher v. City of Boca Raton*, 1998), the Supreme Court held that employers are vicariously liable to victimized employees for actionable hostile work environments created by a supervisor with higher authority over the employee. In its holding, the Court outlined a two-pronged affirmative defense for employers where no tangible employment action had been taken.

In *Faragher*, Beth Ann Faragher, a former lifeguard for the city of Boca Raton, Fla., filed suit under Title VII against the city, claiming that her supervisors created a sexually hostile work environment through their repeated unwelcome touching and comments about her body. She accused several of her immediate supervisors of a five-year pattern of unwanted touches on her body, including her buttocks, lewd sexual gestures and pantomimes, and vulgar remarks about the desirability of female lifeguards and beachgoers. While she had not complained to upper management directly about these actions, she had discussed them informally with another immediate supervisor.

The district court found for Faragher, both in the creation of a hostile work environment and in the city's liability. On appeal, the *en banc* (the court's full panel of judges instead of a regular panel of three) sitting of the Eleventh Circuit upheld a three-judge panel's finding against her. Using the three-part *Meritor Savings Bank* test, the court found that although there was indeed a hostile work environment, the city did not have vicarious liability for it because the offending supervisors were not acting in the scope of their employment and the city did not have constructive knowledge of the environment. Because Faragher was not threatened with firing or demotion, the court said that the actions of her supervisors were not facilitated by their employment with the city. Moreover, the knowledge of one supervisor of the actions of others did not, the court said, impute knowledge to the city—and thus, the city could not be liable for failing to stop it.

The Supreme Court, however, reversed the Eleventh Circuit and found for Faragher. In a 7-2 decision by Justice David Souter, the Court said that employers can be held vicariously liable for the actions of their employees under Title VII. Establishing one element of the *Faragher/Ellerth* defense, Souter wrote, "We hold that an employer is vicariously liable for actionable discrimination caused by a supervisor, but subject to an affirmative defense looking to the reasonableness of the employer's conduct as well as that of a plaintiff victim" (*Faragher v. City of Boca Raton*, 1998, p. 780). The actions of the city, Souter said, were not reasonable to prevent a hostile work environment: Not only had the city not disseminated its policy against sexual harassment to its employees, it had not tried to keep track of the behavior of Faragher's supervisors. As a matter of law, Souter added, the city did not exercise reasonable care to prevent the harassment.

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In the accompanying case, Kimberly Ellerth quit her sales job at Burlington Industries after 15 months, alleging that her immediate supervisor engaged in sexual harassment. She refused his advances and reported that she feared doing so would result in tangible adverse consequences, such as lack of promotion. However, none of these materialized—in fact, Ellerth was even promoted. Nor did she report the harassing behavior to her supervisors. She also brought suit under Title VII. A district court granted summary judgment to Burlington, but the *en banc* Seventh Circuit Court of Appeals reversed the decision in a series of fractured decisions and rationales.

In upholding the Seventh Circuit, Justice Anthony Kennedy, also writing for a 7-2 majority, noted that the Seventh Circuit's reliance on so-called *quid pro quo* assertions (i.e., suggestions that sexual favors will result in tangible work benefits) was incorrect. Rather, he said, "a tangible employment action taken by the supervisor becomes for Title VII purposes the act of the employer" (*Burlington Industries, Inc. v. Ellerth*, 1998, p. 762). However, he added, employers can raise a defense against such allegations if reasonable care is exercised to prevent and correct harassing behavior and if the employee does not take advantage of these preventions to avoid harm.

In sum, employers do have vicarious liability for the harassing actions of their supervisors under Title VII. But they may raise an affirmative *Faragher/Ellerth* defense, which is a two-pronged test, as Justice Souter put it in *Faragher*: "(a) that the employer exercised reasonable care to prevent and correct promptly any sexually harassing behavior, and (b) that the plaintiff employee unreasonably failed to take advantage of any preventive or corrective opportunities provided by the employer or to avoid harm otherwise" (*Faragher v. City of Boca Raton*, 1998, p. 807). An employer cannot, however, raise this defense if there is evidence of the harassment resulting in a negative tangible employment action, such as firing, demotion, or reassignment to a less desirable position.

It is worth noting that in both cases, Justices Clarence Thomas and Antonin Scalia dissented. Thomas, writing both times for himself and Scalia, said that the defense treated workplace sexual misconduct differently from racial misconduct, and he would treat both actions the same. Thomas' rule would be simpler: "An employer should be liable if, and only if, the plaintiff proves that the employer was negligent in permitting the supervisor's conduct to occur" (*Burlington Industries, Inc. v. Ellerth*, 1998, p. 767). In addition, the dissenters complained that the majority did not sufficiently explain how employers could avoid vicarious liability nor exercise the defense, predicting that lower courts would be deluged by sexual harassment cases and that "employer liability very well may be the rule" (p. 773).

The legal community shared some of the dissenters' concerns in the wake of the *Ellerth* and *Faragher* decisions. For example, Franklin (1998) asserted, like Justice Thomas, harassment claims should be uniform and treated similarly to other employer misconduct claims; she also feared that employers would be able to escape liability only by acting with undue (and unreasonable) haste after finding out about alleged harassment. DiLorenzo and Harshbarger (1999) expressed concern that the focus of harassment claims would shift to the presence or absence of a tangible employment action rather than the severity of the alleged harassment, calling this new analysis neither "logical or practical" (p. 15).

In the decades since it was announced, the *Faragher/Ellerth* defense has been used in thousands of cases; in the first year and a half alone, 72 cases resulted in judicial opinions (Sherwyn et al., 2000). In this early analysis, Sherwyn and his colleagues found that employers acting reasonably and responsibly in regard to sexual harassment claims were likely to receive the benefit of the doubt from courts; indeed, in their study, employers won most of the time. In addition, and perversely, they note, employers who exercise less care may fare better in the courts than those who exercise more. Their results prompted their sobering claim that "courts are prepared to conclude that a good policy constitutes 'reasonable

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care,' and that employers can prevail regardless of whether plaintiffs reported harassment" (2000, p. 1289). A recent study echoed these results: "Most courts do not consider the circumstances surrounding instances of workplace sexual harassment when assessing whether an employee acted reasonably" (Venuti, 2019, p. 560).

The Supreme Court refined its *Faragher/Ellerth* standard in the context of a hostile racial environment in *Vance v. Ball State Univ.* (2013). At issue here was the question, left open in *Faragher/Ellerth*, of who counted as a "supervisor" for purposes of a Title VII harassment claim. The plaintiff, Maetta Vance, was the only worker of color in the Ball State University Dining Services. She complained about racial epithets directed at her and students of color by a white female co-worker, and that co-worker received a written warning against the behavior. However, following a series of additional racially charged incidents, Vance brought suit against Ball State in federal district court, arguing that her work duties and overtime had been reduced, she was forced to work through breaks, and she suffered unjust disciplinary actions. She claimed that the white colleague was in fact her supervisor, and as a result, Ball State was vicariously liable for the hostile racial workplace environment. A university investigation failed to result in any relief.

The district court found for Ball State, saying that because Vance's white co-worker did not have power to fire, discipline or demote Vance, that colleague was not considered a supervisor. The Seventh Circuit Court of Appeals agreed. Rather than using the U.S. Equal Employment Opportunity Commission's (EEOC) broader definition of "supervisor," the court said that to be considered a supervisor, a person must have the power to fire, demote, reassign, or discipline a worker (that is, engage in tangible employment actions). It was agreed that Vance's coworker did not have these powers; thus, she was not Vance's supervisor.

Vance appealed to the Supreme Court. A 5-4 majority sided with Ball State, affirming the Seventh Circuit's definition of "supervisor." Justice Samuel Alito, writing for the majority, wrote that employers could suffer vicarious liability for employee conduct "only when the employer has empowered that employee to take tangible employment actions against the victim, i.e., to effect a 'significant change in employment status, such as hiring, firing, failing to promote, reassignment with significantly different responsibilities, or a decision causing a significant change in benefits'" (*Vance v. Ball State Univ.*, 2013, p. 431). Explicitly rejecting the EEOC's broader definition (which he called "a study in ambiguity"), Alito said that the word "supervisor" did not appear in Title VII but was introduced in the *Faragher/Ellerth* cases "as a label for the class of employees whose misconduct may give rise to vicarious employer liability" (p. 436). Thus, he said, it should be understood in the context of those cases, in which the alleged harassment was done by individuals with the capability to engage in tangible employment actions against the victims.

The dissenters, led by Justice Ruth Bader Ginsburg, lamented the narrowing of the definition of "supervisor," suggesting that this move would limit the ability of some victims of harassment to seek relief. Ginsburg outlined four cases in which the alleged harassers would not meet the Court's narrowed definition and thus prevent vicarious liability. She further called on Congress for assistance: "The ball is once again in Congress' court to correct the error into which this Court has fallen, and to restore the robust protections against workplace harassment the Court weakens today" (pp. 470–471).

As with the original *Faragher/Ellerth* defense, the *Vance* case was not widely applauded by legal scholars. Davenport (2014) called the outcome "ill-fitting" and suggested a new category of employees, called "superiors," to more accurately reflect workplace realities (p. 1454). Grossman (2013), a law professor, accused the *Vance* majority of preferring rules that can be easily applied to those that rely on

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individual case facts and preferring employers over employee "victims." Perhaps most damning, in a study of Congressional actions over four decades to override judicial interpretations in which five traits of a decision were determined to make it more likely to be overwritten by statutory amendment, the *Vance* majority decision was found to be "furiously waving all five red flags (including an override-inviting dissent)" and "ought to be a prime candidate for an override" (Christiansen & Eskridge, 2014, p. 1413).

Some jurisdictions have expanded victims' rights under the *Faragher/Ellerth* defense or even abandoned it for more robust protections under state or local laws or the unique characteristics of gender-based harassment. For example, in New York, the New York City Human Rights Law ("NYCHRL") has been interpreted as giving more protection to employees than its state or federal analogs. A recent example that demonstrates this breadth is the New York City case *Zakrzewska v. The New School* (2010). Dominika Zakrzewska sued a co-worker and her former employer, The New School, alleging sexual harassment in violation of the NYCHRL, part of the New York City Administrative Code; she did not sue under Title VII. A district court found that there was a genuine question of whether the NYCHRL would permit The New School to raise a *Faragher/Ellerth* defense against Zakrzewska's allegations, which included retaliation claims. The district judge then certified the question (asked a higher court to clarify the law) to the Second Circuit Court of Appeals, which then certified the question to the New York Court of Appeals (again, the highest court in the state despite the name) for a response.

The New York Court of Appeals answered in the negative. The elements of the NYCHRL assign liability for discrimination under three circumstances: where the employee engages in managerial or supervisory responsibilities; or where the employer knew of the discrimination and either acquiesced in it or did not take steps to stop it; or finally, where the employer should have known about the discrimination and failed to act reasonably to stop it. This plain language of the statute, said the state high court, as well as its legislative history, imposes strict liability on employers for harassment and retaliation claims by supervisors. This does not square with the *Faragher/Ellerth* defense, which offers defenses only based on an employer acting with reasonable care (*Zakrzewska v. New Sch.*, 2010). According to scholars reviewing New York labor law, this case will have far-reaching implications for harassment cases in New York (Langan & Ritts, 2011).

In another example of expanded victim protection, the Third Circuit in *Minarsky v. Susquehanna Cty.* (2018) interpreted the timeliness element of *Faragher/Ellerth* more broadly, allowing employees increased flexibility when determining when to report incidents of harassment. Sheri Minarsky suffered unwanted sexual advances by her supervisor for many years before she finally reported the behavior after several other women had already done so. She said she feared reporting his behavior because of her suspicion that her complaint would not be acted on sufficiently and that he would become "nasty" in any confrontation (*Minarsky v. Susquehanna Cty.*, 2018, p. 314). Moreover, she depended on her part-time employment for her daughter's medical bills, and her supervisor knew this.

After Minarsky's and others' complaints, the supervisor was fired. The question then became whether the employer, Susquehanna County (Penn.), should be contributorily liable for the supervisor's actions. The county raised the *Faragher/Ellerth* defense, saying that Minarsky's delay of years in reporting the claim should mitigate in its favor. However, the Third Circuit, cognizant of the difference in circumstances among sexual harassment cases, said that it should be up to a jury to determine whether the delay in Minarsky's case was reasonable. "If a plaintiff's genuinely held, subjective belief of potential retaliation from reporting her harassment appears to be well-founded, and a jury could find that this belief is objectively reasonable, the trial court should not find that the defendant has proven the second *Faragher-Ellerth* element as a matter of law," the court said (*Minarsky v. Susquehanna Cty.*, 2018, p. 314). In this

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case, the court added, there were sufficient reasons for a jury to determine whether Minarsky's fears of retaliation by the offending supervisor were reasonable enough to justify the delay in reporting his behavior. Although this approach to the *Faragher/Ellerth* defense differs from nearly every other circuit, at least one legal analyst believes that the flexibility offered to victim-plaintiffs in reporting based on the disparate circumstances of each situation is not only fairer to them but also appropriately reflects the defense's underlying policy rationales (Venuti, 2019).

These two cases, *Zakrzewska* in New York and *Minarsky* in the Third Circuit, are examples of ways in which the *Faragher/Ellerth* defense can be modified to better fit the needs of employees or discarded altogether to allow for stronger protections by states and localities. In a somewhat sardonic piece in the *Washington Post*, Somin (2019) points out that this perspective is the reverse of the American tradition, in which those concerned with minorities relied on the federal government's protections rather than those proffered by the states. Here, as in other arenas like drugs, guns, and carbon emissions, the states and cities can, as he put it, "provide valuable protection for vulnerable minorities."

To summarize, *Faragher* and *Ellerth* jointly established vicarious and strict liability for employers if a supervisor (1) creates a hostile work environment and (2) takes tangible employment action against the employee—such as hiring, firing, or failing to promote. If no tangible employment action occurred (and it should be recalled, *Vance* narrowed the definition of "supervisor" to require that the alleged harasser have these kinds of powers over the victim), the employer may proffer an affirmative defense by showing that it took reasonable care to prevent and correct sexually harassing behavior and the victim unreasonably failed to take advantage of opportunities to prevent, correct, or otherwise avoid the harm. States and local governments can create stronger rights for plaintiffs than Title VII, as has been done in New York City.

However, a plaintiff's recovery under Title VII's judicially created hostile work environment is limited. First, the class-membership requirement excludes otherwise meritorious harassment claims that are not founded on a judicially recognized immutable characteristic: race, color, religion, sex, national origin, etc. Second, among other splits, courts are divided on whether to consider evidence of harassment outside the workplace that occurs on social media (Gelms, 2012). Whereas courts traditionally require plaintiffs to show severe or pervasive conduct under the totality of the circumstances to bring a successful hostile work environment claim under Title VII (*Harris v. Forklift Systems, Inc.*, 1993), the issue of whether to allow plaintiffs to establish their burden through social media evidence of "harassment outside the four walls of the workplace" remains to be settled (Gelms, 2012, p. 262).

PART III: CURRENT SUGGESTED RESPONSE TO WORKPLACE BULLYING

The sociopolitical history of American labor law has historically treated workplace bullying as a subissue of workplace harassment. While plaintiff-workers may pursue tort remedies against individual plaintiffs, defendant-employers only become liable under Title VII, and by extension *Faragher/Ellerth*, if a supervisor creates a hostile work environment and takes tangible employment action against the employee such as firing, demoting, or reassigning. In the absence of tangible employment action, employers may proffer an affirmative defense by showing that (1) they exercised reasonable care to prevent and correct harassing behavior and (2) the victim unreasonably failed to take advantage of any preventive or corrective opportunities. Employers will escape vicarious liability if plaintiffs can show that an alleged harasser does not meet the definition of a "supervisor" outlined in *Vance*—that is, with the capacity

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to perform tangible employment. What is more, the digitization of the workplace obfuscates whether evidence of off-site, online harassment can be used to establish discrimination.

A variety of remedies have been proposed to address the foregoing issues. One solution is to incrementally broaden the interpretive scope of existing statutory frameworks. For example, because bullying has the judicially recognized capacity to violate Title VII under its workplace harassment taxonomy (*Ramseur v. Perez*, 2013), some scholars suggest maintaining the legislative foundation but broadening its application to social media as an extension of an employee's work environment. Gelms (2012) suggests implementing a "substantial benefit" test, where employers will be held vicariously liable for workplace harassment occurring on social media if they derive a substantial benefit from the social media forum where the harassment occurred. Under this proposed analysis, an employer is liable for a supervisor's harassing comments if they are posted to the company's Facebook page but not to the supervisor's private Facebook timeline. Whereas the employer receives economic benefits by maintaining company-sponsored social media, as related to branding or advertising, the employer derives no economic or personal benefit from the supervisor's private account. Yet in an era of social media "influencers" and self-branding, where distinctions between corporate advertising and self-promotion are becoming increasingly blurred (Khamis et al., 2017), this type of legislative expansion may need to be reexamined.

A second suggestion involves adopting a *laissez-faire* policy of common law nonintervention. The common law, by design, is an organically fluid legal corpus that shifts alongside the American *volksgeist*. Tort theory, including IIED and IIER, has a certain amount of breathing space that allows it to accommodate shifting moral attitudes. If there is evidence to suggest that courts and juries are beginning to relax the "extreme and outrageous" requirement of IIED, and bullied workers are being awarded damages, the need for new legislative action becomes moot (Morris, 2016). To retroactively legislate on an issue addressed at common law invites frivolous litigation. To capture an unforeseen issue by expanding preexisting legislation, namely Title VII, dilutes the purposes and importance of the protections afforded under the original legislation.

A third solution suggests enacting narrowly drawn legislation that corrects the specific shortcomings of slow-moving tort theory and the out-of-purpose application of existing statutory law. Professor Yamada's HWB seeks to accomplish the foregoing through the following: First, the bill provides a private cause of action for damages and injunctive relief to bullying victims (Yamada, 2013). Whereas the OSH Act requires OSHA to bring suit on behalf of injured workers, HWB directly empowers victims. In so doing, the bill incentivizes employers to take preventative or remedial measures by increasing the likelihood that injured workers will seek compensation through litigation. OSHA attorneys are unlikely to bring suit because of limited government resources and low probabilities of success: recalling that the law was not drafted to remediate workplace conditions less than deadly or physically grievous. Bullied workers, however, are much more likely to spend resources redressing personal harms, especially with higher probabilities of success due to clearly defined statutory terms and conditions.

Second, HWB clearly defines "abusive work environment" and "abusive conduct," providing workers and employers with sufficient notice of actionable claims. An abusive work environment exists when "an employee or employer, acting with *intent* [emphasis added] to cause pain, injury, or distress to an employee, subjects the employee to abusive conduct that causes physical harm, psychological harm, or both to the employee" (Yamada, 2013, p. 176). By including a scienter requirement, Yamada disposes of whether a bully's subjective intent is necessary to fit the definition of workplace bullying. This, in turn, clarifies ambiguity in the literature. Without experts needing to determine whether intent is a definitional feature of workplace bullying, the aforementioned issues related to expert-witness testimony in IIED

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actions become moot. Professor Yamada's solution aligns with the authors' recommendation: adopting an intent-based definition of workplace bullying, favored by American social science scholarship, to facilitate plaintiffs' recovery. Absent a scienter requirement, courts would be loath to punish unintended maltreatment that turns on workplace context and worker subjectivity.

Abusive conduct is defined as "acts, omissions, or both, that a reasonable person would find abusive, based on the severity, nature, and frequency of the conduct" (Yamada, 2013, p. 177). Here, Yamada builds on the *Harris* (1993) framework, by incorporating the reasonableness standard defining a hostile work environment under Title VII. HWB, like *Harris*, articulates a two-part test to determine whether a hostile work environment is present: (1) the conduct must create an environment that a reasonable person would find abusive, and (2) the victim must subjectively perceive the environment to be abusive. Incorporating a standard of subjective perception further clarifies the definitional discrepancies of workplace bullying which makes proving IIED difficult. For workplace bullying to be actionable under HWB, the bully must act with intent that is perceived by the victim. And building further on IIED deficiencies, HWB does not have a requisite level of "extreme and outrageous" conduct that a bullied plaintiff must prove to win her case.

Finally, HWB imposes strict liability on employers for unlawful bullying conduct in which their employees engage. Drawing from the Supreme Court's twin decisions in *Faragher* and *Ellerth*, the bill holds employers vicariously liable to bullied employees regardless of whether the employed bully is a supervisor with successively higher authority over the employee (thus eliminating the *Vance* requirement of the harasser's capacity for "tangible employment actions" against the victim). And just like *Faragher* and *Ellerth*, employers may proffer an affirmative defense when (1) the employer exercised reasonable care to prevent and correct actionable behavior, and (2) the employee unreasonably failed to take advantage of appropriate preventive or corrective opportunities provided by the employer.

Despite varying legal approaches to address what social scientists and law scholars agree to be an intensifying problem, workplace bullying remains an academic discussion. Since being introduced in the California state legislature in 2003, HWB has been considered and rejected by some 31 legislatures (Workplace Bullying Institute, n.d.-a). And while the anti-workplace-bullying movement has gained support over its 20-year history, the approval has not yet reached a critical legislative mass. If workplace cyberbullying is to gain the legal attention that "traditional" bullying never could, it must be because of digital media's pervasiveness and tendency to exacerbate psychological harm.

CONCLUSION

The anemic legal response to *face-to-face* workplace bullying preempts, to a certain extent, conversations related specifically to workplace *cyberbullying*. Courts are just beginning to recognize workplace bullying's capacity to create distinct and cognizable injuries: psychological, physical, and economic. Despite there being no independent workplace-bullying cause of action, preexisting legal frameworks are beginning to reflect prevailing social attitudes. Yet because legal acknowledgment of face-to-face workplace bullying is still in its infancy, legal acknowledgement of virtual workplace bullying is necessarily *in utero*. While some scholars have foreshadowed the urgent dangers posed by increased workplace digitization and Internet connectivity, the law, as a reactive instrumentality, is not yet positioned to protect or rehabilitate workers injured by bullying—cyber or physical.

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KEY TERMS AND DEFINITIONS

Farragher/Ellerth Standard: An affirmative legal defense for employers who show (1) an exercise of reasonable care to prevent and correct harassing behavior and (2) a plaintiff unreasonably failed to take advantage of preventative opportunities provided by the employer.

Hostile Workplace: A subcategory of workplace discrimination that becomes actionable when a plaintiff (1) personally perceived the work environment to be hostile and that (2) a reasonable person in the same position would perceive the environment to be hostile. Courts look to the totality of the circumstances including the frequency and severity of the abusive conduct.

Intentional Infliction of Emotional Distress: A common law tort allowing a plaintiff to recover from a defendant's intentionally extreme and outrageous conduct that caused the plaintiff to suffer severe emotional distress.

Intentional Interference in the Employment Relationship: A theory of common law tort recovery under which plaintiffs collect pecuniary damages if they can prove (1) the existence of a business relationship, (2) the defendant knew of the relationship, (3) the defendant intentionally and maliciously interfered with the relationship, and (4) the defendant's conduct directly caused the plaintiff's damages.

Occupational Safety and Health Act of 1970: A federal labor law, which promotes safe and healthful working conditions in the U.S. The legislation established the Occupational Safety and Health Administration (OSHA), which determines and enforces workplace safety standards.

Scienter Requirement: A defendant's mental state, which a plaintiff must prove to establish liability and recover.

Title VII of the 1964 Civil Rights Act: A federal labor law, which protects employees from discrimination based on race, color, national origin, sex, and religion. Actionable conduct includes discrimination in hiring, promoting, training, disciplining, assigning work, or discharging employees.

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Chapter 102
Pesticides as an Occupational Hazard Facts and Figures

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ABSTRACT

The chapter gives insight into the harmful use of pesticides in different professional environments. It portrays the use of pesticides as the potential risks to the health of users and third parties and a danger to the environment. The use of pesticides has increased at a phenomenal rate. Pesticides and their threat to the biological world have reached almost hysterical proportions. Their residues are found everywhere, particularly those of the so-called "hard pesticides" or organochlorine compounds, DDT. Herein, an attempt has been made to reflect pesticide exposure in different occupational settings and their harmful effects on humans. Excess use of pesticide in agriculture has placed workers in this industry at risk of lethal exposure. Personnel working in domestic pest control service is also from continuous exposure to the pesticide. Further, the chapter highlights various corrective measures to be taken by the people working in different occupational settings to combat the dangerous effects of pesticides in everyday life.

INTRODUCTION

Fungicide, Federal Insecticide and Rodenticide Act (FIFRA) (US EPA, 1947) define "Pesticides are substances or mixtures intended for preventing, destroying, repelling, any insects, rodents, nematodes, fungi or any other forms of life declared to be pests; designed for use as a plant regulator." Pesticides consist of various categories of toxins. Pesticide-related health effects can be acute or chronic. The duration of exposure, the dose of exposure and the route helps in determination of the severity of health effects. The

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intention of use defines pesticide validity as per the FIFRA. For example, bleach is used differently in different places, viz as a (disinfectant) in bathrooms (Figure1), floors or tissue culture room (Figure 2) but it is not considered a pesticide when it is used for whitening of clothes. The United States uses over 1/4th of the world's total pesticide. It is the biggest pesticide hub for 4.5 billion pounds of chemicals per year required for the manufacture of 890 active ingredients, which are packed commercially into 30,000 formulations. 75% of pesticides used in agricultural settings and the rest 25% of structural fumigation, homes, gardens, hospitals, etc. In England, indiscriminate use of pesticides caused a reduction in the number of birds in gardens and farmland. An Indian Press Report (http://www.organicconsumers.org/Toxic/pepsi_coke_pesticides.cfm) confirmed the presence of high level of pesticides and insecticides such as lindane, DDT, malathion, chlorpyrifos in twelve popular soft-drink brands. The Food and Agriculture team of Greenpeace claimed that tea sold by some biggest tea brands in India contained pesticides. The team tested 49 samples, out of which 46-tested positive for one or more pesticide. The statistical data collected from vegetable samples of local vendors from different parts of the city Pune, India were inspected. A few samples revealed the presence of residues of banned pesticides such as DDT, chlordane, captafol, and carbofuran. The demands for imported chemicals by developing countries have extensively increased the value of pesticide purchase by Third World countries (World resources, 1986). Pesticide use in public health care and agriculture has impacted the lives of human. Reports from Central America suggested that large-scale spraying of DDT on cotton developed resistance to the pesticide in Anopheles, a malaria vector (Chapin & Wasserstrom, 1981). Further, in recent years, the number of reports of mortality and human poisonings due to pesticides are growing (Foo, 1985). The most glaring problem faced today in developing countries is the presence of organochlorine residues in foodstuffs like in poultry, red meat, and vegetables in Nigeria (Atuma, 1985), eggs in Kenya (Mugambi et al., 1989), and potatoes in Egypt (Lakwah et al., 1989). These residues get detected in human milk. A survey in Third World countries revealed levels of organochlorine residues in milk samples of nursing infants were greater than the acceptable daily intakes proposed by the Food and Agriculture Organization (FAO/WHO, 1988). Apart from the health disaster imposed by pesticide exposure, an environmental disaster is also a matter of great concern. In rural areas, pesticide application equipment or empty pesticide containers are discarded and disposed in fields, on river banks and water bodies. Pesticide contamination reduces the soil organic, matter, changes soil chemistry, and pH. Hence, excessive use of a pesticide also impacts our natural resources like agricultural products, drinking water, air, and land.

Pesticide Exposure-Occupational Settings

- Multiple industries
  - Agriculture/Farms
  - Manufacturer and Transportation
  - Domestic Pest Control
- Variety of workers
  - Applicators, Field Workers, Firefighters, Scientific Research

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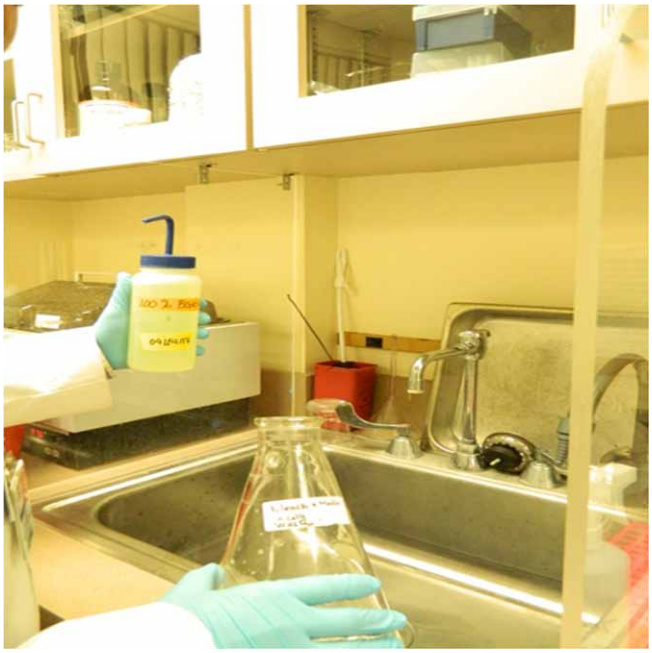
Figure 1. Use of bleach as a (disinfectant) in bathrooms

Figure 2. Use of bleach as a disinfectant in cell culture and tissue culture room



Pesticides often spread to vicinity areas beyond their target due to the physical movement of pesticide via air, water, and aerosols at the time of application or afterward, a process known as drift. The drift of pesticide has resulted in 1/4th of pesticide-related illness reported in California in 2000. Schools, hospitals and other settings with sensitive subpopulations could be adversely affected by pesticide drift. Workers working in the field should be cautious as they may bring home pesticide from work through

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contaminated clothing or containers and expose family members. Secondary contamination of cars, furniture, and carpets at home happens by wearing contaminated clothing from work. Domestic exposure to bleach and other household disinfectants also result in pesticide exposure. Finally, these harmful pesticides enter our food cycle through food and may lead to low-level ingestion exposure, which may be dangerous especially to children. US EPA has set a maximum allowable reference dose for residues of pesticide in food as per the data provided by manufacturers. The recent regulatory decisions regarding concerns for infant exposure to pesticides include the elimination of the use of aldicarb on bananas (Wilson *et al*., 2003).

OCCUPATIONAL HAZARD ON FARMS

In the US, the pattern of pesticide use in agriculture varies from region to region and by commodity to commodity. Pesticides used in high volume in production areas, which require hand labor, like orchards, nurseries, vineyards and raw vegetables. The amount of pesticide use is lower where production is mechanized like livestock dipping and grain agriculture. The workers in the fields are at a high-risk occupation with exposure of chemicals on a daily basis. Many of these pesticides may produce a carcinogenic effect, and some may cause congenital disabilities. California witnessed high rates of organophosphate pesticide poisoning in the agricultural sector during 1982 to 1990. According to the survey, the workers who loaded, applied or mixed pesticides were 35 times more susceptible to illness than the average rate. Further, surveillance data showed remarkable pesticide illness rates among people in the agricultural industry, especially in field workers and applicators (crop protection workers). As per the annual data of the United States, an estimated 5.1 billion pounds of pesticides were invested into plants and adverse health impacts of these chemicals (Figure 1) affected approximately 1-2 million farm workers. Further, the annual data by the Federal government also suggested acute pesticide poisonings among 10,000–20,000 employees in the agricultural industry. Short-term effects of pesticide exposures include nausea, rashes, blisters, stinging eyes, respiratory problems, and headaches. Cumulative long-term exposures may increase the threat of chronic health problems such as neurological impairments, congenital disabilities, cancer and Parkinson's disease for farmworkers, their families, and children. Manifestations of illness include detrimental effects on the central nervous system, causing impaired mental alertness, anxiety, and nervousness, which provoke sleep difficulties with nightmares, impairment of memory, apathy, and depression (Grob & Harvey, 1953; Durhami *et al*., 1965). A medical history of organophosphorus substance exposure in population showed complaints about visual difficulty, forgetfulness, and persistent muscular pains along with a loss of interest in work (Metcalf & Holmes, 1969). Dermatitis and other skin diseases affect farmers handling pesticides (Spencer, 1966). Most challenging protocols in some countries are unrefined Worker Protection Standard. As a result, farm workers lack knowledge of hazardous pesticides used in professional setting and potential exposure to their families. One common occupational risks associated with farm workers include the unsanitary condition and lack of potable water. The farm workers, therefore, are at potential risk of exposure to harmful chemicals and waterborne parasites (Figure 3).

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Figure 3. Farm workers at highest risk of direct exposure to pesticides.

OCCUPATIONAL HAZARD IN DOMESTIC PEST CONTROL

In the domestic setting, there are various pests like beetles, lice, garden moths, ants, mites, mosquitoes that harbor home for their survival. Hence, an integrated pest management program strives to minimize pest risk through proofing, hygiene, and environmental management. The use of pesticide in home, gardens, hospitals, schools, offices, etc. leads to chemical exposure. Pest control management team to evacuate the place before fumigating the indented area. But residues of chemicals are left or are being carried by drift in the vicinity area which may contaminate their body, clothes or food they take. Further, the pest control personnel are also at the risk of endangerment due to constant exposure to hazardous chemicals (Figure 2). Several cases of the use of pesticides as a choice for suicide-homicide attempts got reported. Pesticides used in veterinary products for the treatment of fleas and ticks, which results in indirect exposure to the family. A pesticide may recklessly treat in homes for protection against mosquitoes, cockroaches or rodents. Some pesticides are used in schools or playgrounds to destroy weeds. Domestically, certain topical pharmaceuticals directly applied to children's skin or scalp, which may contain an insecticide to control scabies or lice. High doses or long-term exposure to such products may result in acute poisoning. The pharmaceuticals in International Pharmacopeia to treat head lice contain 2% of organophosphorus (Malathion) and organochlorine (Lindane) pesticides. Boric acid, also called hydrogen borate, often used as an antiseptic, insecticide, in house holds. Powdered roach-killing products that contain boric acid is hazardous and could cause acute or chronic poisoning if swallowed by someone (Figure 5).

OCCUATIONAL HAZARD IN MANUFACTURE AND TRANSPORTATION OF PESTICIDES

The manufacturing and transporting of pesticides have resulted into an alarming occupational hazard. The pesticides manufactured in bulk are given by different means to dealers and distributors and finally reach the users. This whole procedure involves many people who directly or indirectly encounter harmful chemicals. Pesticides should be transported, stored and secured properly to protect people and en-

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vironment. Cases of occupational deaths related to ammonia transportation were reported. Workers are exposed to various harmful chemicals for eight to ten hours daily in certain pesticide industries. They become a source of pesticides fragment carriers through their contaminated clothes, shoes, bags, and body to their families. The transportation of synthesized pesticides to the final destination is another challenge and a threat to the society. Accidents and damage by highly flammable or highly toxic pesticides during transportation and storage is alarming. Spills and leaks, which occur while transporting, lead to environmental pollution and menace to residential areas (Figure 6).

Figure 4. Pest Control activity carried out by professionals inside home

Figure 5. Roach control activity at home by using powdered roach-killing products containing boric acid

One of the terrible incidents related to pesticide manufacturing industry in history is the accident at Union Carbide's carbaryl and aldicarb plant in Bhopal, India in 1985. Over 60,000 pounds of methyl isocyanate, a toxic chemical and over 30,000 pounds of other reaction products spread like a toxic cloud

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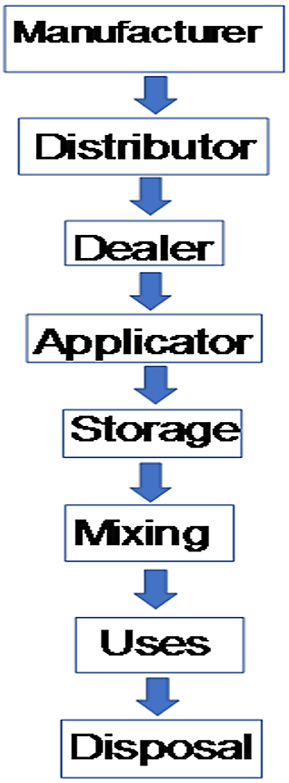
over 15 square miles distance adjacent to the plant. Consequently, victims suffered from various ailments such as eye injury, lung damage, and suppression of immune system, chromosomal damage, and changes in blood chemistry, spontaneous abortions, congenital disabilities and newborn deaths (Mehta *et al*., 1990). Another unfortunate incident happened in The Northwest in 1991 while transportation of toxic pesticides in bulk between manufacturing plant and final users where several gallons of carbamate soil fumigant spilled into Sacramento River, California from a derailed freight train (Garcia, 1992). Similarly, reports reveal a freeway accident, where ammonia discharged from a broken loading valve on a truck. The death caused much panic, and the residents were evacuated, and schools closed for the day. An episode happened during anhydrous ammonia transfer into delivery tank truck from a railroad tank car in a fertilizer supply operation. The death occurred by inhalation when ammonia tank exploded at a chemical plant. Investigations revealed repeated exposure to methyl bromide while manufacturing or transportation led to many deaths. Methyl bromide exposure shows symptoms like nausea, vomiting, chest pain for several hours. The repeated exposure damage lungs, nervous system, and kidneys. Accidental contact with eyes or skin causes skin rashes and severe burns (West, 1964).

Figure 6. Schematic route of the pesticides from manufacture to its disposal



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OCCUPATIONAL HAZARD VIA VARIETY OF WORKERS

Pesticide exposure occurs in various occupational settings. Besides the enormous use of pesticides in agriculture, farmers in the field or people involved in the transportation of pesticides are subjected to high exposure. Fieldworkers are exposed while pesticides application or picking the treated crops. Emergency response personnel viz firefighters may get exposure to victims soiled with pesticides at an accidental site. The exposure develops through body fluids, such as vomitus or stool, viscera or stained clothing of severely exposed patients. Some airlines treat aircraft with pesticides to control international vector transport. Flight attendants and passengers in cases exposed to pesticides within an enclosed area. Thus, subsequent exposure to pesticides may occur by contaminated victims to health care staff and emergency personnel. Thus, a corrective measure should be taken to control such exposure.

PESTICIDE EXPOSURE IN OCCUPATIONAL SETTINGS: A GROWING HAZARD TO HEALTH

Literature survey carried out so far, report a consistent pattern of health risk on the farmers who are prone to pesticide exposure (Antle *et al*., 1995). The exposure to pesticides may result in acute (Ambridge, 1988; WHO/UNEP, 1990) and chronic health effects in humans. Health impairments of high concern include acute or chronic neurotoxicity (Tayler, 1976; Abou-Donia & Preissin, 1976; Abou-Donia & Preissig 1976; Abou-Doma & Preissig, 1976; Xintaras *et al*., 1978; Savage, *et al*., 1988; Eskenazi & Maizlish 1988; Robinson *et al*., 1993; Kishi *et al*., 1995), lung damage, respiratory failure (Ames, Brown, Mengle, Kahn, Stratton & Jackson, 1989) and infertility in men (Restrepo *et al*., 1990; Rupa *et al*., 1991). Various reports of cancers emerged due to pesticide exposure, such as hematopoietic types of cancer (Guzelian, 1980) and soft-tissue sarcomas (IARC, 1988). Chronic effects such as malfunction of the neurological system, cancer, reproductive disability, reduced growth or congenital disabilities in neonates have been reported due to devastating exposures. Cases of endocrine disruption (Rutherford, 1996; Colborn, Myers & Dumanoski, 1996) and allergic dermatitis sensitization (Adams, 1983) are also observed. Inhibition of cholinesterase results by organophosphates and N-methyl carbamate pesticides depress parasympathetic nervous system (Lopez-Carillo & Lopez-Cervantes, 1993; Miller & Shah, 1982).

Long-term pesticide exposure in different occupational settings leads to a challenging hike in early-onset of Parkinson's disease (Butterfield *et al*., 1993; Gorell *et al*., 1998). Studies on animal brains revealed some pesticides cause lasting behavioral aberrations during a critical period of cell division (Chanda & Pope, 1996; Eriksson, 1996). Agriculture workers are vulnerable to zoonotic infectious disease like methicillin-resistant Staphylococcus aureus (MRSA), avian flu, and West Nile virus etc. Farmworkers face chronic respiratory hazard by bioaerosols, such as organic specks of dust, endotoxins, and chemical toxicants from field agrochemicals (Kirkhorn & Garry, 2000). National Institutes of Health (NIH) investigated that workers using chlorinated pesticides exceeding hundred days developed the risk of diabetes (Montgomery, Kamel, Saldana, Alavanja & Sandler, 2008). Researchers involved with pesticide studies collaborates with industries like Imperial Cancer Research Fund in England and Hans-Olov Adami of the Karolinska Institute, Sweden for health and safety reasons (Hardell *et al*., 2007). Intense exposure to fumigants may produce confusion, sleepiness, poor coordination or unconsciousness. Pyrethrin is extracted naturally from the flowers of chrysanthemum whereas pyrethroids obtained synthetically in pesticide laboratories. Pyrethrins and synthetic pyrethroids affect the central nervous system and may

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cause convulsions and poor coordination. Paraquat is a pyrylium herbicide, which if accidentally swallowed or inhaled may cause lung fibrosis. Asthma is another common respiratory disorder caused by pesticide exposures in multiple occupational settings (Selgrade *et al*., 2006; Hernandez *et al*., 2011). A case of persistent asthma due to inhalation of the organophosphate insecticide Dichlorvos reported in France (Deschamps *et al*., 1994) while two instances of occupational asthma due to fungicides Fluazinam and Chlorothalonil (Draper *et al*., 2003) observed in the UK. Further, in Belgium, a case of occupational asthma was found due to the chronic exposure to tetramethrin, a pyrethroid insecticide (Vandenplas *et al*., 2000).

CORRECTIVE MEASURES TO CONTROL THE HAZARD

The common pesticides or metabolites detected in the general population are organophosphates, organochlorines, carbamates, herbicides, pest repellents and disinfectants. National Health and Nutrition Examination Survey (NHANES) in 1999-2000 examined blood and urine samples of selected participants for chemicals or their metabolites. The national report on human exposure to environmental chemicals showed bio monitoring exposure data on environmental chemicals for non-institutionalized US civilian population over two year periods. During 1993 to 1996, pesticides graded among main items involved in human exposures. Another common type of pesticide exposure was disinfectant. International treaties on "prior informed consent" and "persistent organic pollutants" aimed to reduce the global burden of hazardous or lethal chemicals that affected US exports. Inadequate law enforcement and lack of regulations in developing countries increased pesticide issues in the world (Calvert, *et al*., 2001; Smith, 2001).

The Environmental Protection Agency (EPA) keeps a check on pesticide use as per Worker Protection Standard (WPS). WPS targets agricultural workers or pesticides handlers to control pesticide poisonings and injuries. WPS protocol compiles importance of pesticide safety training, personal protective equipment beside material and safety notification of pesticide's applications, decontamination supplies, and emergency medical assistance. The US EPA regulates and checks the sale and use of pesticides, and is responsible for health and safety of agricultural workers. A pesticide may be for a general or restricted use, and licensed applicators may use restricted pesticides. USEPA regulates pesticide label information such as pesticide toxicity, registration number, and recommended first aid measures. A pesticide label shows the toxicity category, highlighting "Danger" and "Caution" for high and low toxic pesticides respectively, along with essential precautionary statements (Rosenberg, & O'Malley, 1997). Many commercial pesticide formulations contain hazardous compounds, like piperonyl butoxide, synergist, a constituent in most pyrethrin or pyrethroid formulations. A significant portion of pesticide formulations comprised of "Inert" ingredients. "Inert" ingredients may not be active against the target pest but may cause some toxic effect on exposed personnel. Pesticide inventory is maintained to organize redundant storage. Proper disposal and controlling spillage of pesticide are also significant. Pesticide safety is necessary to limit access to pesticide storage facility to authorized personnel only. Security also includes not leaving pesticide containers or sprayers unattended anytime. Safety is critical, especially during transportation. Accidental pesticide spill can be observed by using specially equipped vehicles during transit. Side rails on trucks keep a check on falling cargo while making turns. Application equipment and bulk tanks, fittings, hoses should be checked periodically for leaks, cracks, or defects. Proper precaution should be taken in the event of pesticide spills, and drivers should be trained accordingly to deal with

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such a mishap. According to the U.S. Department of Transportation, specialized driver training and a license are mandatory.

Pest control service in residential areas should be used with caution. Items of use especially edibles must be covered or removed from areas to be treated. Pets should be displaced during treatment and until the pesticide is dry. It is critical to sterilize patients with pesticide exposure to prevent any chances of subsequent exposure. The detrimental effect of pesticide exposure depends on the degree of contamination and dose of pesticide. In the case of pesticide contact with skin, the individual should take a shower with soap and shampoo immediately. Spaces under fingernails, scalp, ear, etc. may act as a reservoir for the pesticide. Therefore, careful scrubbing of this area is required. (Reigart & Roberts, 1999) In a severely contaminated patient, body fluids, such as urine and stool, can be saved for residue analysis of pesticide. The infected body fluids of patients should be put in airtight containers in a secure place. Healthcare staff and forensic scientist may be exposed to passing pesticides during analysis. The symptoms of such exposure may vary from short-term eye irritation, headaches, rashes and odor-related symptoms to symptoms that are more persistent.

CONCLUSION

The objective of discussion of this chapter is to assess the health hazards during pesticides handling, storage and use to create awareness to control its exposure. Researchers advise biological monitoring techniques to reduce the intensity of absorption of selected pesticides. The common pesticides or metabolites detected in the general population are organophosphates, organochlorines, carbamates, herbicides, pest repellents, and disinfectants. Indiscriminate use of pesticidal chemicals is responsible for many complications in humans. Pesticides are poisons and should be used restrictively as per instructions. The exposure to pesticides in occupational settings may produce acute and chronic diseases. Employees dealing with pesticides must be aware of chemicals composition, first aid, and medical help in case of pesticide chemical accident. Therefore, taking necessary precautions during the use of pesticide may avoid the risk of diseases in human, plants and animals.

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KEY TERMS AND DEFINITIONS

Hazards: A hazard is an agent that has the potential to cause harm to a vulnerable target.

Pest Control: Pest control is the regulation or management of a species defined as a pest, a member of the animal kingdom that impacts adversely on human activities.

Pesticide Drift: Pesticide drift refers to the unintentional diffusion of pesticides and the potential negative effects of pesticide application.

Pesticide Handling: The use of pesticides in farm, forest, nursery, or greenhouse.

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Chapter 103
A Review of Heat Stress Policies in the Context of Climate Change and Its Impacts on Outdoor Workers: Evidence From Zimbabwe

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ABSTRACT

Record-breaking summer heat events are increasing in frequency in Zimbabwe and 2016 was a particularly hot year with the country experiencing its worst heat wave event in decades. Currently, Zimbabwe has no coordinated public health response to deal with heat wave events and no specific data on heat-related morbidity and mortality. The country has no legislation for protecting workers against environmental heat exposure, particularly those most vulnerable who are employed in the informal sector. These workers are also at risk due to their outdoor work environments. The article outlines the state of climate and heat stresses in Zimbabwe, as benchmarked against other African countries and France. It further summarizes outdoor workers' susceptibility to heat exposure and the need for the Zimbabwean Government to develop policies to ensure the health and safety of an increasing population of outdoor workers in Zimbabwe.

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INTRODUCTION

Climate change has been impacting global climatic and environmental conditions over the last few decades and many countries are experiencing extreme high temperatures, which have caused a serious public health issue. Extreme temperatures, particularly in occupational environments, have impacted negatively on humans, increasing their susceptibility to disease and heat-related mortality. Susceptibility among human populations depends on various factors which include social, cultural and /or physical status. Current studies show that the effects of climate change are progressively affecting the cultural and socioeconomic lives of communities (Frimpong, Van Etten, Oosthuzien, & Fannam, 2015). It has been shown that many people throughout the world are frequently exposed to environmental conditions that exceed the capacity of normal human physiological coping mechanisms, placing such individuals at risk of suffering heat-related illnesses (Kjellstrom, 2009). Heat is one of the naturally occurring hazards associated with climate change, and heat waves account for a significant proportion of human mortality (WHO, 2014). Globally morbidity and mortality trends associated with heat wave events have been published in a number of developed countries. The heat waves that occurred in Western Europe in August 2003 exposed flaws in the management of environmental public health risks (Kovats & Hajat, 2008). The extreme heat event that struck Europe in 2003 resulted in 15,000 deaths (Rey et al., 2009). Russia experienced 1,100 deaths in 2011 (Grumm, 2011) and the Chicago heat waves had a reported mortality of 800 in 2010 (Hayhoe, Sheridan, Kalkstein, & Greene, 2010). Research has shown that a lack of intervention plans and coordination between health agencies and social services impacted negatively on the management of these events (Kovats & Hajat, 2008). However, there is a gap in data for Africa, which is particularly vulnerable to the effects of climate change and heat waves. Global average surface temperatures are estimated to increase further by between 1.8 – 4.0°C by the year 2100 (Intergovernmental Panel on Climate Change (IPCC), 2007). Current literature concurs that heat-related illnesses will emerge as major public health issues in the future, particularly in developing countries, including Zimbabwe. Studies have shown that heat waves occur more frequently than any other natural hazard, yet are not generally recognized as a significant cause of mortality, particularly in developing countries (Koppe, Kovats, Jendritzky, & Menne, 2004). Contemporary global economic changes and urbanization in poor countries has further exposed populations to environmental health hazards, including heat waves, with there being very limited policies on heat prevention and adaptation strategies in place. Zimbabwe and the whole of the Southern African Development Community (SADC) region, is facing an increase in the frequency of hot summer days and extremely dry cold winter days caused by climate change. These changes are being experienced in Zimbabwe, greater parts of South Africa, Botswana and Namibia with an increase of between 0.2°C to 0.5°C per decade (Young et al., 2010). Since 1980, Zimbabwe's average annual temperatures have also been increasing. The issue has been compounded by changes in rainfall patterns that have resulted in rainfall becoming increasingly uncertain (United Nations Framework Convention on Climate Change (UNFCCC) zimnc2, 2013). In recent years increasing heat wave episodes have also been experienced in the region. Although people may adapt to higher temperatures, their physiological capacity to cope with sporadic heat events is uncertain (Patz et al., 2000). According to Zimbabwe's National Climate Change Response Strategy (2014), there has been an increase in daytime temperatures between the months of September and November with an average minimum of between 15°C, average maximum of 29°C and a potential peak of above 35°C. During the wet season, the average minimum temperature is 12°C, and the average maximum is 30°C, potentially peaking as

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high as 35°C. This is coupled with high humidity events. Being a landlocked country, it is predicted that Zimbabwe will also warm more rapidly in the future than the global average (UNFCCC zimnc2, 2013).

In the context of climate change and the assumption that heat waves will be a significant environmental hazard associated with climate change in the future, this article reviews heat stress policies and outdoor occupational health sustainability in the context of climate change in Zimbabwe. Furthermore, the article explores heat exposure and adaptation strategies of a particularly vulnerable group of outdoor informal sector workers, also known as street hawkers/vendors, in urban Bulawayo – Zimbabwe. The City of Bulawayo is the second largest city in Zimbabwe and was the country's industrial hub in the 1980s. The population of Bulawayo is 653,337 (303,346 males and 349,991 females) according to the Zimbabwe 2012 Census. Unemployment in this city has escalated to a point where approximately 80% of the people are working in the streets as hawkers. This is slightly better than the country's national unemployment rate, with is 85% (Mpofu, 2010). Adaptation is viewed as the most effective way to reduce susceptibility of these workers to climate change effects (Frimpong et al., 2015). In assessing their adaptation, coping capabilities and awareness, this article will analyse and inform the development of appropriate government policies aimed at heat stress prevention.

SUSCEPTIBILTY TO HEAT STRESS AND CLIMATE CHANGE IMPACT ON STREET HAWKERS IN ZIMBABWE

Heat waves, which have been experienced globally, present specific public health challenges, particularly for certain sectors of society and different occupational groups, yet there is inadequate research on this phenomenon, particularly in developing countries such as Zimbabwe (Gubernot, Anderson, & Hunting, 2014). The groups most vulnerable to heat exposure include the elderly, children, displaced individuals, those with chronic diseases, low socio-economic status and those in outdoor occupations (Kovats & Hajat, 2008). The population in Africa is also recognized as susceptible due to the high prevalence of poverty and inadequate coping strategies to manage climate change effects (Madzwamuse, 2011). In Bulawayo, street hawkers are unlikely to gain employment in the formal sector due to economic conditions that have resulted in the closure of industries in the city, the previous industrial hub city of Zimbabwe. Through personal observation and informal communication with local residents it appears as if the situation has been further complicated by the influx of rural people into the cities due to the collapse of the commercial agricultural sector, erratic rainfall patterns and recurrent droughts. Street hawkers are exposed to the effects of heat waves as they operate their businesses on street pavements for long hours and with minimal protection from the sun. Most common heat management strategies recommend taking regular short breaks, however, this is hard to enforce as these workers spend long hours in the open, with limited knowledge of the effects on heat on their health. This cohort also has limited choices as open street vending is their major source of income and livelihood (see Figure 1).

The combined exposure to high temperatures, humidity and radiant heat from direct sunlight, as well as the lack of ready access to potable water, means that this sector of the population are at a much greater risk of suffering the effects of heat stress and its related illnesses which can cause death and other chronic conditions such as renal disease. Heat stress can also exacerbate other underlying conditions (Coco et al., 2016). In this article, susceptibility is described as the state of vulnerability of a group of people (street hawkers) who are exposed to the impacts of climate change. Street hawkers in develop-

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ing countries are particularly vulnerable as they have less capacity to adapt and there are no heat wave health-related policies that would apply to them (Frimpong et al., 2015).

Studies have shown that extremely high temperatures coupled with air pollution and high humidity contributes to higher morbidity and mortality rates as well as an increase in more general chronic health concerns (Kjellstrom, Butler, Lucas, & Bonita, 2010). The situation is further exacerbated by rapid urbanization that contributes to the urban heat island effect (Corburn, 2009). With the increasing impacts of global warming, these workers are becoming more vulnerable. It has been estimated that outdoor workers have a 20-fold increased risk of suffering heat-related mortality as compared to other occupational groups and this trend is likely to be more pronounced in developing countries with no public health response to heat wave events (Centers for Disease Control, 2008). Heat exposure is likely to impair the physiology, health status and work performance of this group of individuals (Parsons, 2003). Preparing for future heat wave events of increasing severity and duration poses a difficult challenge to governments in developing countries such as Zimbabwe. As a result of economic decline, there are a growing number of hawkers on the streets who make ends meet under the exposure of extreme heat, working with no shade for cooling or resting. The health and livelihood security of this population is at risk as global climate change is intensifying (Mpofu, 2010; Rusvingo, 2015). As temperature is a key driver of climate change in Africa, the susceptibility of outdoor workers is at stake. In the context of climate change and socioeconomic development there is a gap in the protection of this large and vulnerable sector of society and there is a need to develop appropriate policies to ensure the security of this group.

Figure 1. Street vendors (hawkers) in Bulawayo

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CLIMATE CHANGE AND HEAT STRESS PREVENTION POLICIES IN ZIMBABWE - TAKING INFERENCES FROM OTHER COUNTRIES

Experience gained from the developed world indicates that the impact of climate change can be reduced by the creation and enforcement of targeted heat-related public health policies that are compatible with available financial, human and technological resources (Frimpong et al., 2015). Countries, particularly those located in the tropics and other hot and humid areas, need to develop all-inclusive climate change adaptation policies to protect their populations. Zimbabwe's Initial National Communication to the United Nations Framework Convention on Climate Change (UNFCCC 1998 - 2014) and the Zimbabwe Agenda for Sustainable Social Economic Transformation (Zim-Asset) 2013-2018 were used to evaluate the country's preparedness to mitigate the effects of heat waves and to protect street hawkers who are deemed to be a particularly vulnerable sector of society.

The United Nations Framework Convention on Climate Change (UNFCCC) lobbies individual countries to develop and implement climate change policies and programs as a way to reduce and prevent climate change impacts on the population. Zimbabwe views climate change as an important issue that needs to be tackled. There is evidence of perennial droughts, floods, hail storms, more hot days and heat waves that impact the agro-based economy, natural resources, livestock production and the wellbeing of the population. According to the Zimbabwe's Initial National Communication to the United Nations Framework Convention on Climate Change (UNFCCC) (1998), there is a lack of financial and human expertise within Zimbabwe to embark on climate change research programs. Zimbabwe developed the National Climate Change Strategy to deliver and strengthen climate change and disaster risk management policies. However, this has now been superseded by the Zimbabwe Agenda for Sustainable Social Economic Transformation (Zim-Asset) 2013-2018. The Zim-Asset acknowledges the effects of climate change and this has led to the creation of the Ministry of Environment, Water and Climate which falls under the Food Security and Nutrition Cluster of the Zim-Asset Strategy.

Although Zimbabwe ratified the UNFCCCC approach, it has no separate Climate Change policy legislation. According to the Zimbabwe National Climate Change Response Strategy (ZNCCRS) 2014, climate change is covered in various uncoordinated sector policies, which include the following: National Policy and Program on Drought Mitigation, Draft Disaster Risk Management Policy, Second Science, Technology and Innovation Policy 2012, Agricultural Marketing and Pricing Policy and Small, Micro and Medium Enterprise Policy. Though climate change is recognized, such divisions in policies through sectoral areas are deficient in dealing with the predictable impacts of climate change and the scope of vulnerability. The uncoordinated sectoral approach leaves some areas of the population, like the street hawkers who operate under unregulated conditions, vulnerable as no government organ is responsible for their social protection. The holistic framing of health to cover climate change effects is not clearly articulated in all these different sector policies. This creates a gap in the understanding and implementing action on health impacts. In African countries like Botswana, Ghana, Nigeria, Tanzania, South Africa and Zimbabwe there is a lack of clear regulatory and policy frameworks that have a defined authority to manage the implementation and adaptation issues of climate change, particularly for the informal sector of street hawkers (Chagutah, 2010; Madzwamuse, 2011). In this case, climate change receives inadequate policy direction with inadequate allocation of resources. Kenya has established a national climate change secretariat that is part of the Ministry of Environment and Mineral Resources. This group is responsible for coordinating climate change elements located in different ministries.

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The Second Zimbabwe Communication (2013) shows that extensive systematic research related to climate change has been conducted on water resources, agriculture and forestry by government institutions and non-governmental organizations. The reason for this focus bias may be that Zimbabwe relies substantially on rain-fed agriculture and climate reliance resources (Chagutah, 2010). Various initiatives are being carried out by government in conjunction with other partners and communities to deal with the effects of climate change on vulnerable communities and ecosystems. The studies, however, are biased towards rural populations and therefore exclude the vulnerable urban population of street hawkers (Brown et al., 2012). Development in Africa also focuses on the advancement of the rural population (Parnell & Walawege, 2011). Research on human health issues related to climate change is focused on malaria and other water borne diseases, however, no studies have been conducted to assess the association between climate change and the health of outdoor workers, particularly street hawkers, who spend most of the day exposed to direct sun. Climate change effects are projected to aggravate the heat-related health issues in developing countries that lack heat prevention strategies and policies. In considering the World Health Assembly's four climate change priorities of 2008: (1) the scale and nature health vulnerability; (2) health protection and promotion strategies; (3) decision-making support, surveillance and monitoring; and (4) assessments of financial and other resources aimed at health protection (WHA, 2008), Zimbabwe has not conducted any occupational health studies that include heat disorders.

Zimbabwe promulgated an environmental management law in 2002 that regulated environmental monitoring functions. Some had previously been carried out by environmental health departments in central and local government authorities. These included monitoring for environmental issues, including air pollution and water pollution which now fall under the Environmental Management Authority. This approach impacted negatively on urban environmental monitoring activities as no monitoring is currently conducted. Consequently, there is a lack of data needed to evaluate services, identify risks and protect the health of the population. Monitoring the risk of heat-related health impacts is emerging as a concern in public health and there is a need for it to be included in the country's climate change strategy (Kjellstrom, 2009). The Environmental Management Act (Chapter 20:27) which embraces climate change effects has not been reviewed since the adoption of the new constitution in 2013.

There appears to be no clear delineation between environmental and climate change related issues administered by different governments departments and no focal sector to coordinate activities. According to the goal of the climate change response strategy, of mainstreaming climate change adaptation and mitigation strategies, Zimbabwe needs a multi-stakeholder engagement approach to develop a national climate change framework that will provide measures to protect the population who include those who are vulnerable, such as street hawkers. Susceptible groups must be identified in both rural and urban settings and be involved in decision making. This will enable social and economic development that will address climate change impacts. The current Zimbabwe Climate Change Strategy does not include adequate heat wave mitigation strategies to protect vulnerable people.

Zimbabwe Change Strategy Showing Overlap and Gaps Compared to France

Western Europe was hit by severe heat waves in August 2003 (Kovats & Hajat, 2008; Rey et al., 2009). The 2003 heatwave in France caused 14,800 deaths in the first three weeks of August leading to a major review of policy. France now regards climate change as a priority target whilst Zimbabwe views it as an issue that needs to be dealt with. Both countries have National Communications to the United Nations Framework Convention for Climate Change. French policies developed to deal with climate change

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effects, including heat prevention plans, were used as a benchmark to measure Zimbabwe progress in this regard. The Zimbabwe Climate Change Strategy has no heat prevention strategy. Table 1 provides a summary of the gaps that still exist in the Zimbabwe's strategy compared to that of France.

Table 1. Comparison of France and Zimbabwe's Climate Change Strategies with inclusion of heat prevention

	France **6th National Communication on Climate Change** **October 2013**	**Zimbabwe** **2nd National Communication on Climate Change** **October 2013**
National Communication to United Nations Framework Convention for Climate Change	Tackling climate change is a priority target for France. The French Environmental Charter on environmental education for sustainable development is a national priority and is inscribed in the constitution. It emphasises environmental education and training as the core principles of the French Republic towards tackling climate change. The French National Adaptation Plan (PNACC) was developed through a vast consultation exercise that resulted in over 200 recommendations which were used as a foundation basis for its development.	Zimbabwe views climate change as an important issue that needs to be tackled. The Zim Asset's emphasis is on recurrent drought and floods that impact the country due to climatic changes. Global warming affects the country's agro-based economy that depends on rain-fed agriculture, livestock production and natural resources. The Zimbabwe National Climate Change Response Strategy is a response to the effects of the climate. Zimbabwe has a medium term plan (MTP) 2012-2015 to deal with climate change which was superseded by the Zimbabwe Agenda for Sustainable Socio-Economic Transformation (Zim Asset) 2013-2018.
Heat Prevention Policy Inclusion	Heatwave Plans were developed and put in place to manage the immediate effects of this type of crisis. Developed regional and local (cities and inter-municipality) adaptation schemes. All report to the NAP for consistency.	No heat wave plans are in place. Will institutionalise climate change response governance framework at the national, provincial, district and ward levels – still being developed.

While France views climate change and environmental education as a national priority enshrined in the constitution, Zimbabwe recognizes it is an issue that needs to be addressed and their focus is on the impact of drought and floods. France has a sophisticated heat wave management plan that was developed after extensive consultation and Zimbabwe has yet to address the issue at this level. There is therefore a significant difference between the developed country approach, compared to that of Zimbabwe. The French strategy can clearly not be directly adopted in a developing country where people are poor and have no access to resources such as electricity and air-conditioned public spaces. A more regionally appropriate strategy needs to be employed, such as the planting of trees to provide shade and taking steps to educate people and reduce the urban heat island effect.

CONCEPTUAL FRAMEWORK: HEAT HAZARD DUE TO CLIMATE CHANGE, A LINK BETWEEN EXPOSURE, SUSCEPTIBILITY, AND ADAPTATION STRATEGIES FOR A VULNERABLE POPULATION

In developing countries, such as Zimbabwe, there is a lack of knowledge amongst the general population about the health impacts of heat stress and heat exposure management is sub optimal (Phuong, Few, & Winkels, 2013). There is a need to conduct further research on the impacts of heat wave events to

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inform decision makers and the population about their roles and responsibilities in planning adaptation strategies, raising public awareness and developing policies. Figure 2 outlines a conceptual framework for this approach and incorporates concepts drawn from the Intergovernmental Panel on Climate Change (IPCC), Special Report on Managing the Risks of Extreme Events and Disaster to Advance Climate Change Adaptation (SREX) and Ahmedabad reports (Field, 2012; Tran et al., 2013). This framework outlines heat as an environmental hazard associated with climate change, establishing a link between exposure, susceptibility of individuals and their adaptation strategies. The conceptual framework can apply to different hazards or disasters with a known cause. In this case, it can be used to develop heat stress prevention policies and guidelines.

The theory of susceptibility in relation to climate change has different interpretations. In this paper the concept is assumed to recount the extent to which heat as a hazard affects the human social and environmental system (Reed et al., 2013). In terms of this model, street hawkers are physically exposed to heat as a hazard. Exposure is the state of subjection to and the duration and/or degree to which an individual is in contact with heat. Street hawkers conduct activities in the open, on hot paving in direct sunlight, and they work long hours. Some might shelter under improvised plastic cover, but they remain vulnerable. During summer, these workers experience extreme heat events that can result in heat stress and other chronic health effects.

In this framework, susceptibility is how an individual succumbs to, or is affected by, the effects of heat. The susceptibility of those exposed is dependent on their individual characteristics which include age, health status of individuals and social capital (Tran et al., 2013). In Bulawayo, outdoor workers encompass various members of the population and vending is their primary source of income. These low socio-economic groups include the elderly and children, as well as people with chronic diseases.

The exposed group needs to have the capacity to cope with and recover from heat-related stress. Adaptability in this model refers to the capacity of those affected to respond and recover from the disturbance (Reed et al., 2013). In Zimbabwe, the National Climate Change Strategy should include heat stress prevention policies to reduce health burdens, particularly for outdoor workers. Without government support the adaptive capacity for the street hawkers is limited by poverty, poor public and environmental health and uncoordinated sectoral institutional interventions. There is a lack of infrastructure and development services for outdoor workers, including access to potable water and sanitation facilities. Adaptation strategies for heat stress prevention should be guided by policies formulated through the involvement of outdoor workers as stakeholders. These policies and regulations will influence the design of infrastructure that suits the needs of the outdoor workers in combating the effects of climate change. Some interventions might include public education, health promotion programs, disaster preparedness, environment monitoring and information drawn from research (Tran et al., 2013). Heat stress prevention policies and climate change adaptation strategies are important in minimizing heat stress and other heat-related illnesses and for protecting the vulnerable street hawkers of Zimbabwe.

Sustainability of Outdoor Work in the Context of Climate Change and Rising Temperatures

Thermal conditions in urban environments are influenced by urban microclimates (Lin, Li, Zhu, & Qin, 2008). Urban vegetation is a crucial component of the environment that can help to combat high temperatures and enhance thermal comfort in the urban setting (Ketterer & Matzarakis, 2014). Growing trees in urban areas is an effective strategy that can be implemented to reduce direct heat exposure

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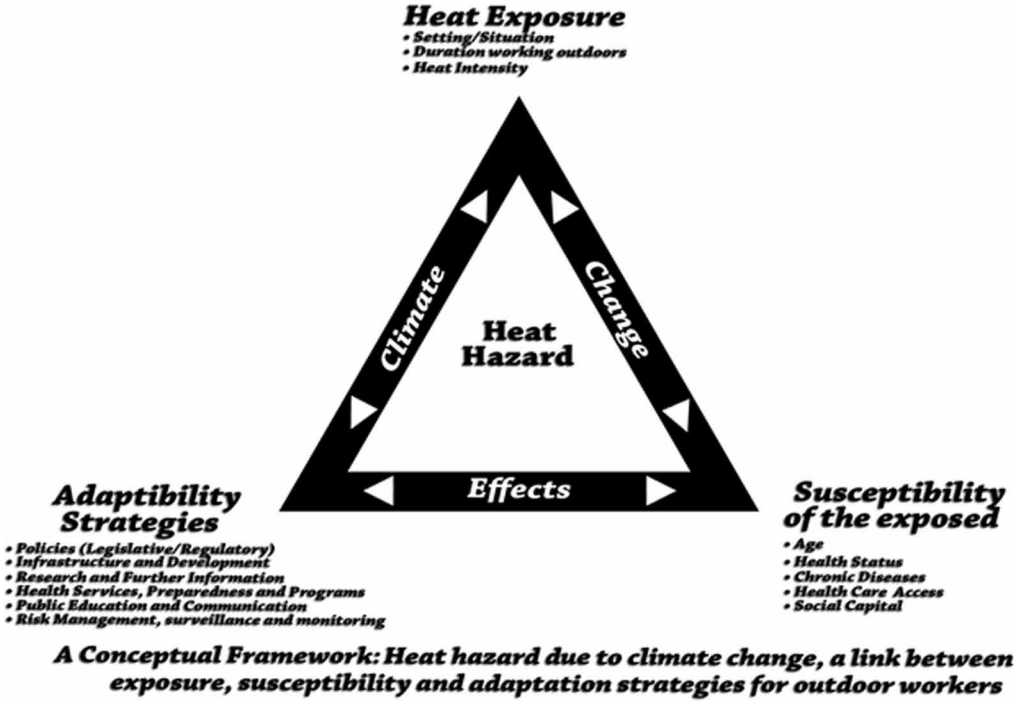
on urban pedestrians and street hawkers (Brown, 2010). In the context of Zimbabwe, and Bulawayo in particular, there are not many trees in the urban setting where street hawkers can set up their stalls areas in the shade of trees. Considering the benefits of trees, such as evapotranspiration, shading, wind speed reduction and radiation, urban vegetation can aid in heat stress management in the context of rising temperature due to climate change. The fact that outdoor work will increase in developing countries, then urban social forestry to cool down the urban environment of cities is imperative, healthy and sustainable. In Bulawayo, tree planting could be a workable measure that could ultimately increase thermal comfort for street hawkers in the future.

Figure 2. Conceptual framework: Heat hazard due to climate change, a link between exposure, susceptibility and adaptation strategies for outdoor workers (Source: SREX and Ahmedabad reports (Field, 2012; Tran et al., 2013))



IMPLICATIONS FOR PRACTICE AND FUTURE RESEARCH

Our research has important practical implications for policy formulation for heat prevention strategies to manage the new public health dilemma of heat-related illnesses using a conceptual framework. Countries that have no policies or policies developed without a conceptual framework run into difficulties of managing heat exposure effects and leave the population prone to heat-related illnesses. The theoretical factor is that of a coordinated approach of managing the exposure effects through identifying and assessing the situation. Controls applied through the provision of resources and from a consultative approach are vital in managing heat-related illnesses. The research finding also gives challenges for further research

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on heat-related information that concerns the hazardous nature of heat exposure due to climate change in developing countries without policies and strategies. This lack of substantive action on heat prevention has led to a need for research to quantify the extent of the problem and to identify knowledge levels of people in developing countries about climate change, heat-related illness and adaptation strategies.

LIMITATIONS

There is a lack of literature on heat stress policies in developing countries, particularly as this relates to vulnerable groups such as street hawkers. Zimbabwean strategies on heat management are biased to sustainable agriculture and not to illnesses associated with heat exposure.

CONCLUSION

Temperatures in Zimbabwe are increasing due to climate change and this presents a challenge as there are no heat stress prevention strategies. Lessons learnt from heat wave fatalities in France, should be used as an indicator to measure Zimbabwe's heat wave preparedness. Heat wave management policies need to be developed to enable a coordinated response to protect vulnerable groups, including street hawkers. There is evidence of vulnerable groups being susceptible to heat stress due to high temperatures caused by climate change. Social forestation in urban areas is highly recommended to provide cooling systems for sustainability in the context of climate change effects. The conceptual framework above can be used as a guide to developing much needed heat prevention policies. Research to provide empirical evidence on the levels of exposure and vulnerability of street hawkers has to be conducted in line with current climate change trends. There are gaps in the Zimbabwe National Climate Change Strategy on heat prevention policy inclusion when compared with the French National Adaptation Plan. Further research is required on occupational heat exposure and heat-related illness. Currently, there is no evidence that there has been any targeted policy direction directed at the development of strategies to mitigate the effects of heat waves on vulnerable people in Zimbabwe. Lessons learnt by France could be used as a basis to guide the development of regionally appropriate strategies in a Zimbabwean context.

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Section 8
Emerging Trends

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Chapter 104
Appraising the Future of Employee Health and Wellness Programmes in the Fourth Industrial Revolution: Wellness Programmes

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ABSTRACT

Employee wellness is an important aspect of human resource management system that has to be considered in the various phases of industrial revolution. It should be noted that during the industrial revolutions work has been transformed from handmade methods to machines. Work productivity improved, yet at the same time the number for those required for manual labour slightly reduced. In each of the revolutions the need to maintain employees remained significant. Therefore, it becomes imperative in the 4th industrial revolution even though managed heavily by machinery and technology to continue with employee wellness for effective productivity within organisations going forward. This chapter will deal with the employee wellness as a strategy that deals with enabling employee welfare. A healthy workforce enhances employee wellness.

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INTRODUCTION

In the era of rapid transformation whereby human resource is challenged by substantial changes particularly in the matters concerning jobs and workforce (Rasca, 2017), employees experience difficulties in balancing work and personal day-to-day life. Employees' inability to succeed in balancing their work and family duties has resulted in an increased number of stress-related ill-health in organisations (Ethel, Ziska & Sulaiman, 2016). Globally, the well-being of workers is important for the survival and advancement of any organisation (Zheng, Zhu, Zhao & Zhang, 2015). Hence, the wellness of employees is of immense concern to all stakeholders in the workplace.

Most of the issues impacting employee health and wellness stem from the stress of balancing work and family stressors to achieve meaningful work-life balance (WLB). Though scholars have argued that WLB is a personal matter (Kim, 2014), the challenges arising from its imbalance have both personal and organisational implications. On the personal level, where there is work-life imbalance, employees manifest stress, depression, anxiety, and panic attacks, among many other physiological and psychological challenges. While on the organisational level, absenteeism, poor performance, frequent sick leave and cost of managing it, as well as other attendant costs take their own tolls on organisational outcomes. Because of these, employers have been providing employees with benefits that should help them to meet their needs.

For instance, some companies provide cover for maternity expenses incurred by their employees who have just given birth, while government organisations are compelled by law in some countries, for example South Africa (Abe, Fields & Abe, 2016), to adopt employee health and wellness programmes (EHWP) which provide strategies to address domain-related stressors. Employees tend to perform their duties and tasks well within a workplace when their needs and expectations are met. On the other hand, conflicts tend to arise when employees' needs and expectations are not met within a workplace. Research shows that conflict between family duties and work demands arises because some facets of work and family demands are irreconcilable (Adame, Caplliure & Miquel, 2016).

In the context of the foregoing, this chapter focuses on the future of work and employee health and well-being to understand whether the traditional wellness programmes adopted by organisations will still be relevant in addressing employee wellness issues in the fourth industrial revolution where the workplace is facing unprecedented and rapid transformations in new technologies.

The previous industrial revolutions came with a lot of benefits as well as challenges to the socio-economic status of the people who experienced the transformations (Rabeh-Morrar & Saeed, 2017). For example, in the first industrial revolution, Great Britain led the revolution by discovering the steam engine which transformed the communication and transportation sector, led to the creation of many jobs and facilitated the movements of people and goods from one place to another (White, 2009)

The second industrial revolution witnessed the introduction of mass production in the form of division of labour and it was powered by the discovery of electrical energy. In the early seventies, the third industrial revolution emerged with the introduction of electronics and information technology which witnessed the discovery of types of machinery that would allow production to take place with little or even without human work (Taalbi, 2019).

The fourth industrial revolutioncurrently being experienced is built on cyber-physical production systems {Forum, 2015 #24}{Forum, 2015 #24}(Hirschi, 2018). In the fourth industrial revolution, systems are being transformed rather than specific products or services. Cyber-physical systems means combined communications, information technology, internet of things (IOT), sensor networks, and internet communication infrastructure (IP). It has also brought with it intelligent real-time processing

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and event management (CPUs), implanted software for logic, 3D/4D printing, artificial intelligence or advanced robotics (AI) which can perform any jobs like humans, automated operations, and management of system activities.

Thus, all these discoveries from the fourth industrial revolution put jobs at risk, because industry 4.0 will limit the demand for labour and urges new essentials for education (Prisecaru, 2016). Research shows that in the next few years some jobs will be lost to robots {2016, 2015 #24}(Forum, 2016).

EMPLOYEE HEALTH AND WELLNESS PROGRAMMES

There are a number of definitions of employee wellness. In this section wellness as opposed to well-being is deliberated upon. Wellness has at times been confused with well-being, yet well-being refers to a state of happiness of people, but wellness is interlinked to prevention and management of employee health (Global Wellness Institute, 2016). Kholl (2017) however considers wellness to be related to an employee's physical well-being which is directly linked to employee health. However, a rather broader definition of employee wellness was provided by the International Labour Organisation as "all aspects of working life, from the quality and safety of the physical environment, to how workers feel about their work, their working environment, the climate at work and work organisation" (ILO, 2018: 6). The definition by ILO is supported by Nielson, Nielson, Obonnaya, Kansala and Isaksson (2017: 104), who postulate that employee wellness relates to "the state of individuals' mental, physical, and general health, as well as their experiences of satisfaction both at work and outside of work." Employee health and wellness programmes are interventions tailored to encourage employee awareness of their individual wellness needs in order to make personal mental and bodily adjustments towards stimulating own health in a supportive work environment (Abe et al., 2016).

Healthcare and its impact on performance is expected to impact global operations everywhere in the fourth industrial revolution. The technological progress spanning the digitalisation of healthcare to social media, sensors, wearables, IoT, AI, augmented reality (AR), robotics and 3D printing as well as nanotechnology will break the healthcare systems, increase interconnectivity and transform society radically. This is well exemplified with genetic engineering, in particular the genome editing, tissue engineering, precision medicine, renegrative biology and medicine, cancer genomics and immunotherapy, optical imaging, microbiome, as well as optogenetics and brain machine interface technology. The digital technologies and AI are expected to have a transformatory impact on medicine and healthcare. Cure other than disease prevention will be offered by these technologies. This is further exemplified by the technologies of gene editing, with the potential of curing genetic diseases such as cystic fibrosis and sickle cell anaemia. Along this line is the germline editing which has the ability to help create intergenerational changes, while at the same time the ability to cure as well as control diseases with genome editing (WEF, 2019). Genome editing is one of the interesting developments that has been associated with genetic engineering, which has been noted as working wonderfully in medical applications. This in particular has been known to be able to introduce a functional gene that replaces a defective one (Clarke, Harley, Hubber, Manea, Manuelli, Read & Watt, 2018). In the process, the healthcare which enterprises are supposed to independently take care of at high prices may become more affordable and cheap for organisations or enterprises to undertake. Nonetheless, some healthcare programmes may continue being part and parcel of the enterprise healthcare and welfare programme.

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One of the components of employee wellness and health programmes is that they go hand in hand with technological trends. As technology takes people to searching information on the internet, employees are equally allowed to access health information at all times. Technology also allows wellness data to be collected.

The wellness programme is also adapted to the corporate culture of the organisation. It is something different in different contexts. It is advisable to integrate the organisation's corporate with evidence-based health information. This therefore permits the understanding of a collectiveness by the entire organisation towards workplace wellness.

Examples of workplace wellness programmes include on-site fitness centres. The centres may not be of the same size; some of the organisations offer a large swimming pool, access to personal trainers as well a rock climbing wall. At times cash incentives are offered to the team and much support is given in reaching their goals.

The smoking cessation programme is one of the components of a good health and wellness programme. Smoking cigarettes does cost employers due to health-related problems associated with the habit. It has also been noted that health provision in the form of a smoking cessation programme to members of the team can be helpful. Organisations like Union Pacific offer a cessation programme on smoking, it conducts lifestyle coaching, and also offers pharmacological assistance to members. Union Pacific managed to reduce smokers from 40% in the 1990s to only 17% in 2007.

Good wellness programmes have been known to offer transit options in terms of transportation to employees. The sharing of a bike or giving public transport incentives can prove to be beneficial to the environmentalists and employees. Current employees who value this programme can easily be appealed to by this programme.

Sometimes some of the components of a wellness programme can include a paramedical service as is the case offered by Google to team members. A massage programme manager is employed by Google in the US. It is often understood that a relaxed member is calm and also feels encouraged at the workplace. One of the activities offered is yoga classes and the space for practising this is given. This is known to relieve stress as members deal with deadlines.

Healthy snacks and lunch instead of eating fast foods in 30 minutes is given by the organisations. Organisations like Bandwidth offer a fitness lunch where members can go home and have lunch or go about playing sport or going to gym for 90 minutes. Organisations like Google offer cafeterias with ready-made lunches and snacks for employees. These have even extended office delivery. The lunch offer does appeal to the team since most people eat. Communal eating encourages interaction between people, thus creating one spot for the intermingling of a diverse and large workforce.

Employee assistance programmes should be offered to all employees and this should include the 'mind component' as well. Organisations like Accenture help employees deal with issues like stress, anxiety, substance abuse and depression.. Work-related stress is therefore addressed outside the workplace with the help of guided support. It is through this kind of programme that financial support can be gained for all workers. Incentives are offered to employees for goals of wellness that they have accomplished. It's through programmes like this that organisations offer empathy in supporting their workers, resulting in employee satisfaction.

Some organisations offer after lunch naps to workers to refresh workers. Organisations like Zappos, Facebook and Assana provide nap rooms to workers to catch an afternoon rest. The flexible work schedules allow employees to refresh themselves with a nap thus renewing their energy. Productivity has been improved as a result, which has been clinically proven. This could involve a walk, extra time

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or even having quiet time to read. It is true that each person gets energised in different ways, so the need to vary the types of refreshment becomes necessary.

Sometimes wellness challenges are provided to the team. Progress is tracked and the employees can win a health-related prize at the end of the month. The drinking of water is encouraged and physical exercise is promoted. Wellness habits are thus encouraged.

Wellness adventures can be offered by the organisation. So far organisations like Zappos do offer subsidies for fitness, wellness reimbursements and health benefits. Wellness programmes are made optional as a way of getting people away from their desks at work. Wellness adventures are done in a fun way and therefore most people enjoy these. It is at this point that people start focusing on the fun rather than the exercise (Staff, 2019). Wellness programmes as exemplified above point out how the well-being of employees are dealt with in organisations, and in the fourth industrial revolution the modification of such programmes will depend on the informed understanding of the organisation towards needs that may impact on employee well-being in the process. It is in the process of using machines and technology that further understanding of how this impacts on employee well-being shall be unveiled, and the policy makers shall amend the present well-being programmes according to the needs. For example, if the use of machines and technology causes workers to develop certain kinds of cancers or tumours, the organisation may develop a medical policy as well as a preventative exercise for the safety of employees. So far well-being programmes can be considered as acceptable, however, additional modifications to the programmes will need to be implemented depending on the need. Therefore the health of an employee may impact the wellness they may realise. Health and wellness are thus interconnected and interrelated (Upadhya, 2017).

FUTURE OF WORK

There is a hushed transformation taking place in work places, whether in the factory, at the airport, at the restaurant, or even if the work involves simple things like washing clothes, taking a shower, or brushing our teeth. New opportunities are being created in different fields of work such as mental, physical and mechanical work.

The rapid transformation of technology is changing the ways we interact, work and communicate, connecting society and workers in more advanced ways and creating new opportunities. Thus, it has become common to hear individuals articulate their need to upskill themselves if they are to stay relevant for a certain job position in the modern workplace (Forum, 2017).

Additionally, research shows that there is a huge mismatch between job seekers' skills and employers' needs, and this mismatch will become even wider since the fourth industrial revolution transforms businesses and jobs at a speed faster than workers can adapt. Studies conducted by Deloitte (2018) suggest that in exactly 15 years, more than two-thirds of today's children who are less than five years old will work in entirely new jobs that didn't exist before, and the jobs that currently exist will not be based where the job seekers stay. Therefore, the future of work is uncertain and there is a need for employees to upskill or re-skill themselves. Rainie and Anderson (2017) stated that some of the skills needed in the future workplace include soft skills, technical skills, entrepreneurial skills, work readiness skills, critical thinking skills, problem-solving and decision-making skills. Klaus Schwab, the founder and executive chairman of the World Economic Forum (WEF), once said there is an uneven distribution of the working population in the world. According to WEF (2017), there is a 1.8 billion working population that is

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between the ages of 15 and 29, but the population and its future growth are not well distributed among countries in the world. Also, areas with huge population increases are far behind in education, which in the future will have impacts on employment readiness.

Furthermore, research predicts that by the year 2030 more than one billion youth in the world will not have the qualifications or skills demanded by the emerging global workforce, therefore it is crucial organisations start preparing tomorrow's workforce today for the fourth industrial revolution (Deloitte, 2018). Butler-Adam (2018) predicts that by the year 2020 global businesses will witness a shortage of more than 40 million workers who have a tertiary education, another 45 million workers who possess a secondary education, and surprisingly there will be a surplus of almost 95 million less-skilled workers. These shortages and surplus of workers are yet again not evenly distributed worldwide, therefore, this indicates that there is a huge mismatch of supply and demand in the world. Science skills as well as engineering skills are in short supply. Among the lacking skills are creative thinking and data analysis which are essential in most contexts, and the equipping of employees with these skills becomes something significant within the fourth industrial revolution (Bhuiya, 2020).

The following table shows the predicted demand for employees in 2020.

Table 1. Anticipated demand for employees by year 2020 compared to the anticipated demand for employees in 2030 in some countries

YEAR	2020	2030
BRAZIL	8.5 Million	40.9 Million
CANADA	700,000 – 1.1 Million	2.3 Million
CHINA	55.2 Million – 75.3 Million	24.5 Million
ITALY	2 Million	0.9 Million
SOUTH AFRICA	6.5 Million – 7.8 Million	6.2 Million – 9.2 Million

Data source: (WEF 2016)

The table above points out that some countries are likely to have more jobs than others, for example Brazil is expected to have more jobs than Canada, China, Italy and South Africa in 2030 as opposed to 2020. However it can also be noted that whereas jobs shall be increasing for some countries like Brazil, Canada, and South Africa, countries like China and Italy shall be experiencing decreasing jobs in 2030 as opposed to 2020. As jobs increase in a particular context, so shall the responsibility of enterprises as they deal with employee wellness, whereas countries that shall have decreasing employee numbers may have less burden of employee wellness programmes. It is also important to denote that it is possible for countries that have less employees to have a higher burden of employee wellness depending on how they budget on the wellness programmes for their employees. Nonetheless, employee wellness as indicated may improve productivity and profitability of enterprises and this then does not only become a benefit for employees but enterprises, organisations, as well as departments, whether public or private in nature.

The fourth industrial revolution brings challenges to the supply and demand of skills in global business, even as Figure 1 points out, the nature of jobs that require different skills. It is also obvious that there will be a massive use of robots, automation, as well as sophisticated data which will make supply chain easier and smarter, and lastly, AI for decision making. Due to the changes taking place in terms of

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the nature of jobs and the skills demanded, traditional employment will be reshaped by these innovations and a gig-based economy gets created (Rabeh-Morrar & Saeed, 2017).

Table 1 shows countries are expected to create jobs, however in Figure 1 the kind of jobs created are specifically pointed out. The nature of wellness related to new jobs may differ and policy makers may be expected to address this for enterprise success as well as for the comfort of employees. It is also possible that as new roles get created, new health-related issues become apparent and therefore the wellness of employees will have to address these scenarios. Another predicted skills pattern by the WEF is depicted in the figure below. As to whether this skills pattern requires additional consideration regarding how the well-being of employees shall be catered for is cause for consideration. It is important to note that some skills like creativity have been useful in the past centuries and will continue to be in the future. It is true that the well-being of an employee lends credence to their ability to be creative. Wellness programmes are not the same and have different purposes as they address different issues such as stress management, massages, campaigns, portals, incentives, or corporate nutrition programmes, whereas some offer just wellness management services, as pointed out by Aldana (2020). Further study may need to be conducted to realise the level of value of each of these programmes to the enterprise or department as well as the employee in context. Since the nature of risk may well be related to the nature of jobs, as Figure 1 presents, the employee wellness programmes that address such contexts may be developed by organisations or departments. Some however tend to offer a comprehensive wellness programme.

WORK/FAMILY SATISFACTION AND EMPLOYEES' WELL-BEING

Boxall and Macky (2014) defined employee well-being as a state of being happy, healthy and having all elements of a relationship-oriented person. Some studies show that there are two perspectives when attempting to define employee well-being. The first one is called *hedonism,* whereby it regards employee well-being as happiness-oriented, and the second one is called *eudemonism,* whereby it regards employee well-being as an outcome of personal achievements and the realisation of employees' potentialities and talents (Deci & Ryan, 2006). Diener, Lucas and Oshi (2002) state that individuals' realisation of their life and personal attributes is called subjective well-being (SWB) and it consists of two elements which are life satisfaction and emotional experience. In some cultures, well-being is not examined based on personal attributes, rather it is based on the society in general. For instance, in China, people take into consideration the well-being of the whole society, not just individual well-being (Zheng, Zhu, Zhao & Zhang, 2015).

In the foregoing context, Schultz, Ryan, Niemiec, Legate and Williams (2014) suggested that a healthy workforce enhances employees' well-being and increases organisational performance. Having a job and being able to work is essential for people's health and wellness, nevertheless, a healthy workforce is also advantageous to employers. Employers contribute to the wellness of the employee by creating a good, comfortable and healthy environment for employees in crafting their wellness programmes. In so doing, employees are motivated to perform well in their duties and tasks with increased morale in the workplace. Responsible employers advocate and provide initiatives to encourage their employees' achievement of work-life balance in order for them to achieve positive outcomes in the organisation (Parakandi & Behery, 2016).

Studies show that healthier employees are frequently less absent and are more encouraged to stay at work, they do not easily get sick, and if they do, they recover quicker from their sickness.

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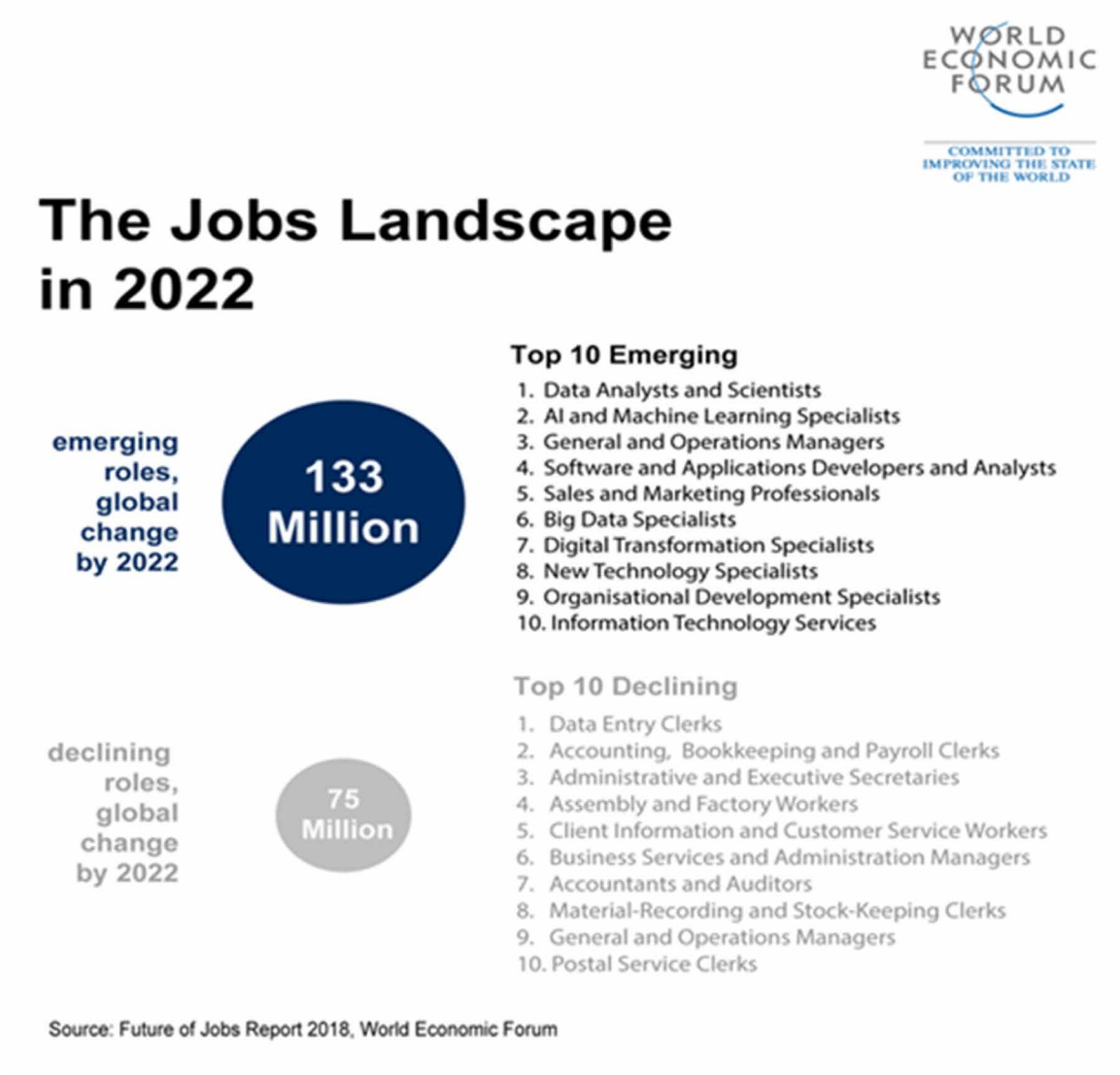
Figure 1. The jobs landscape in 2022
Source: Haanaes (2020)



Some of the benefits of promoting employees' wellness in the workplace are as follows:

- It will improve productivity at work
- It will improve business performance
- It will boost employee morale
- It will increase employees' engagement in duties and tasks within an organisation
- It will also reduce accidents and work-related sicknesses
- It will reduce costs for the business, such as costs of sickness (medical bills, time loss, recruiting temporary staff, among many others).

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Shimazu, Schaufeli, Kamiyama and Kawakami (2015) suggested that an organisation that looks after its employees is more likely to succeed. An organisation must prioritise health over work by promoting various wellness programmes in the workplace. These wellness programmes assist employees to maintain requisite physical and mental health to perform well in their duties.

BENEFITS OF WELLNESS PROGRAMMES TO EMPLOYEES

An employer can offer numerous health benefits to employees such as the provision of vaccinations to prevent some airborne diseases like colds and flu.

SOME ELEMENTS OF WELLNESS PROGRAMMES

A study conducted among professional level employees at a metropolitan municipality in South Africa categorised wellness programmes into: a) work strategies - those designed to address work-related challenges faced by employees, and b) family strategies - those that address employee family-related issues. The study found that the wellness programme adopted by the municipality was suited to address family-related issues and not work-related challenges. The study reported as flows: 1) life strategies: domestic relationship counselling, stress management, substance/alcohol abuse counselling, HIV/AIDS counselling, financial/debt counselling, and 2) work strategies: work from home on an ad hoc basis, job share, compressed workweek, telecommuting and career break (Abe, 2015: 432).

However, the following are other examples of initiatives provided through wellness programmes: flexible work arrangements, telecommuting, job share, dependant-relative care and assistance programmes, maternity and paternity leave, straight-forward financial assistance, provision of crèche services in the work environment, counselling and referral services (Bardoel, Tharenou & Moss, 1999; Kramar, 1998; Kossek, Baltes & Matthews, 2011). A number of the wellness initiatives are important but because the fourth industrial revolution shall involve the use of robots and AI, there will be need for humans to develop trust to work with machines and to relate to machines as well (Lewis, Sycara & Walker, 2018). During the fourth industrial revolution, the abovementioned needs are likely to be part and parcel of the system since they address human employees' needs. In a situation where the processes have been automated, then these needs won't be feasible as such, however, the context shall differ as such. Bardoel et al. (1999) recognised 100 kinds of work-family initiatives, showing that several different strategies have been applied within organisations as a means of addressing wellness issues.

The fourth industrial revolution may impact on employee health, and it is reported that America's factory workers' health declined by two thirds yet productivity increased dramatically from 1960 to 2014 (Min, Kim, Lee, WonJang, Kim, & Song, 2019). The use of some of the exercises for workers' health, as pointed out below, may improve a workers' health and organisational productivity as less abseentism due to sickness is realised.

Fitness Programmes

Employers can build a private gym at the workplace or if not, companies may pay for gym expenses. Also, companies can emphasise group exercises after work such as jogging, walking, and rope jumping.

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Companies may also do this by establishing sports competitions within an organisation at the end of every month and reward those who win the competitions. For instance, a soccer competition, basketball tournament, swimming competition, a volleyball tournament, etc.

Mental Health Programmes

Mental health is very important to both employers and employees, as stress can trigger various health problems that are serious like heart diseases and diabetes. Companies should establish mental health programmes to reduce depression and anxiety which is common with employees. Mental health programmes like yoga classes and full-body massages will help to reduce stress among employees. Also, companies may encourage employees to leave at a reasonable closing time and not stay behind trying to finish their work. This will improve their mental health and increase productivity. The main cause for withdrawal at work, early retirement, and resignation has been associated to poor mental health (McDaid & Park, 2011).

Social Programmes

Companies should consider offering employees programmes that will help them to get to know each other. These programmes may be conducted far from office environments, for instance, companies may establish a movie night for all employees on the last Friday of each month. Also, a company may organise a night party for all employees to attend. In the process employees get the benefit of first becoming part of a community activity as well as getting to relate with those they would not have related with in the first place.

Community Service Programmes

Some people feel good when they do something great for the community. A company may encourage employees to give back to the community by organising a volunteer day for employees to participate in helping out in the community. For instance, participating in general cleanliness, planting trees or organising a fundraising event that will help to generate funds to solve a certain problem within a community.

GLOBAL TRENDS WHICH WILL ENHANCE AND CREATE WORK/ FAMILY SATISFACTION AND EMPLOYEE WELL-BEING

Various studies have shown that job satisfaction has several benefits. A satisfied employee is more productive, more efficient in his/her work, and performs well, and therefore, improves the firm's profitability (Andrade, Westover & Kupka, 2019) and vice versa. The rapid change of technologies has brought about dramatic shifts like work, quality of work, and job satisfaction.

Job satisfaction has different definitions; various authors define job satisfaction in different ways. According to Azeem and Akhtar (2014), job satisfaction is a situation whereby people describe what and how they feel about their job in various aspects; it's about how people like or dislike the job they are in. Another definition is by Fiksenbaum (2013) who defined job satisfaction as a combination of

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good and bad feelings an employee has regarding his/her work. Job satisfaction is whereby employees' expectations match with their job rewards. It's where employees feel a sense of achievement in their work.

Findings have shown that the traditional schedule of working from 9am to 5pm creates family conflicts and leads to most employees feeling unsatisfied in their jobs. This compressed work schedule is associated with a decrease in morale and productivity (Honigman, 2017). The traditional working schedule is characterised by strict boundaries that limit employees; it doesn't give employees freedom and flexibility. In this schedule, employees are expected to engage in matters in their own time, therefore, it will lead to work-family conflict and less productivity at work.

WORK-LIFE BALANCE

Work-family balance is a situation whereby an individual is satisfied in his/her area of work and at home with a minimum level of conflicts (Parakandi & Behery, 2016). It is an equilibrium between the amount of time an employee spends at work and time devoted to the family and other personal responsibilities (Greenhaus, Karen & Jason, 2003). Work-life balance enables one to gain freedom on a personal level and also experience liberty from their input at work (Byme, 2005). Work-life balance is necessary in reducing stress and burn out. It is also noted that chronic stress is one of the issues that workplaces tend to have (Kholl, 2018). Therefore the need for work-life balance is an initiative that management needs to ensure exists in the workplace. It is also important to note that as time passes by the demands that need to be considered will definitely differ according to each organisation's context. The organisations definitely will acknowledge the value of enabling their employees to gain a work-life balance as a result. Fredrick (2019) points out 12 examples of work-life balance initiatives that may be valuable for an individual:

- One such example is in the area where policy makers give flexible leave policies in organisations. So instead of limiting particular time off as leave days, they rather consider it as 'paid time off'. This may be an incentive in the fourth industrial revolution as people get more refreshed by getting time away from work. This then could lead to creative abilities that are more heightened as a result.
- Another exemplary initiative that organisations have undertaken is the art of creating an opportunity where employees engage with the community. This has been known to strengthen the team. Indeed one of the things that is necessary in the fourth industrial revolution is corporate social responsibility, since there will be connectivity developed between various sectors and the enterprise.
- The other exemplary activity that some organisations have adapted is the creation of a healthy work environment. It is in the process that organisations not only offer snacks in the workplace but also give employees freedom to choose how they want to arrange the way they sit at work. This freedom is likely to be more prevalent in the fourth industrial revolution as organisations give liberty to workers to even choose a place where they will work.
- Some organisations have also trained their managers to help without necessarily being called. For example they may notice signs of burn out and so they will reach out and help employees. This aspect may not be easy to understand, and whether in the fourth industrial revolution it shall be handled fully given that some of the tasks shall be delegated to machines in the process. This may then mean that humans may receive little attention and could easily feel neglected as a result. This could also cause situations where stress builts up in the process for human workers.

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- Another example of a work-life balance practice is when flexible scheduling is arranged. This may be slightly different from the routine 8am to 4pm job. However, this is where organisations, departments and entities will give freedom to the employee to finish the task according to the time they can finish it after considering any limitation when it is due.
- One of the examples of a work-life balance is when the organisation is a family friendly environment for employees. In the achievement of this some organisations offer sponsored child care or after school programmes.
- In achieving a work-life balance some organisations end up applying change management techniques. In this case leaders at work are trained how to support their workers during change.
- Another example of work-life balance is when organisations end up offering creative incentives to employees. Offering tangible benefits to the team can boost the morale of employees in the process.
- Another work-life balance example is when employees are given time to nurture their own creativity.
- Providing educational support is one of the ways a work-life balance can be created or enabled to exist. As learning is encouraged, so might productivity be encouraged in the process. In the fourth industrial revolution productivity levels will be heightened and therefore this could be an initiative necessary for the achievement of the goal.
- Creating a fun committee is also necessary for a work-life balance to be achieved. It provides a moment of relaxation in the process.
- Finally it is important to involve the employees in team building exercises. Teamwork strengthens teams and fosters creativity which is a necessary element in the fourth industrial revolution and can boost the company's image in the process.

An individual can meet work and family duties as well as personal responsibilities. Work-life balance involves issues like flexible working time, maternity leave, sickness leave, and parental leave, and time off for dependents. These definitions imply there is a need to establish a good combination between these two issues.

Work-life balance plays an important role in realising employees' performance as well as organisational performance.

The advantages of work-life balance are:

- Reduced turnover in the company
- Improved employee performance
- Bringing about job satisfaction
- Encouraging employees to have an effective commitment to their company, hence creating a sense of loyalty to the company.

THEORETICAL FRAMEWORK

One of the theories used in the area of well-being of employees is the Person-Environment Fit Theory (Caplan, 1987). The theory relates to the employee's well-being, behaviour and how these match the working environment. It is therefore about an individual and how the environmental characteristics match.

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A person's characteristics would include the psychological and biological needs. It is therefore important to note that goals, abilities, personality, value, and needs form the characteristics being pointed out here. While the environmental characteristics do include the extrinsic and intrinsic rewards, the role of the job and the rewards of the job, characteristics of other individuals, collectives in a person's social environment, as well as value and culture help form the integration of the environment. As organisations and enterprises enter the fourth industrial revolution alongside public departments the environment created around the fourth industrial revolution it is likely to dictate the nature of well-being of employees as employees are likely to have lots of work to produce. This work shall be done with technological assistance yet the pressure and need to relax is yet to be revealed as the fourth industrial environment is yet to be studied and understood in its context. Nonetheless, the understanding that organisations, enterprises or public entities may want to accomplish a lot may indicate that pressure to accomplish these tasks, as much as they may be automated this may either positively or negatively impact on the well-being of the employees. It is perhaps too early to give a picture of the environment that shall be available within the fourth industrial revolution. This theory fits in as it deals with environment as well as the individual that is working. In this case the individual can be the employee or worker and the environment can be the work environment involving the use of technology and machinery in enabling productivity to become efficient and productive. The Person-Environment Fit Theory points out the rewards of the job as being part of the environment and therefore in considering the new environment organisations may motivate employees by paying closer attention to their well-being.

Another theory that is useful to deliberate in this chapter is the Conservation of Resources (COR) Theory (Hobfoll, 2001; Hobfoll & Lilly, 1993). The COR Theory is another important theory that places greater emphasis on resources that need to be preserved in the process. These resources can include income. It is true that as technology tends to replace workforce through modifications, thus developed, human employees will have to attain new skills in the process, however in the meantime there can be stress experienced. The loss of income in the case that jobs are lost becomes a crucial concern for those that are affected and as such stress is likely to be encountered. The fourth industrial revolution has untold benefits as well as untold impact that will require detailed study as the revolution unfolds. Nonetheless, the understanding of the fact that stress is one of the issues to be dealt with in the workforce remains to be dealt with, and whether it will be eliminated with the fourth industrial revolution. The two theories pointed out above are related to the well-being of employees or workers as such.

CONCLUSIONS AND RECOMMENDATIONS

Investigating the future of work, work-life balance, and employee wellness is an important task which attracts further investigation of the topic. Promoting wellness programmes in the workplace, encouraging flexibility in work in terms of time flexibility and place flexibility will help in improving work-life balance, achieving job satisfaction, and increasing performance, which will result in the lowering of company's turnover hence increase the company's profitability. In this discussion, the researchers have explained the importance of all these aspects for employees' well-being and the company's future performance. Therefore, a conclusion can be made that work-life balance and job satisfaction are important for the company to generate commitment among its employees. It is concluded that a healthy workforce enhances employee wellness (Haar, Russo, Suñe & Ollier-Malaterre, 2014). Therefore, management support is very crucial within an organisation regarding work-family balance initiatives. Also, globalisation

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and the fourth industrial revolution alerts for immediate measures to be taken to promote workplace flexibility. These call for companies to change the traditional working schedule and adhere to the demands of this era of rapid transformation of technology. This chapter recommends companies to modify their physical and organisational structure and they should target all employees and not only high ranking individuals or executives. It is important for any organisation such as government, NGOs, small-medium enterprises, and big companies to understand the importance of work-life balance and job satisfaction for the future development of these organisations. Research needs to be conducted in investigating not only employees' well-being but also the sustainability of the amount of working experienced by individuals.

Therefore, this study provides a road map for further researches and for organisations to consider the importance of job and life satisfaction of their employees for better organisational and personal results.

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Chapter 105
E-Government of Occupational Safety and Health:
Improvement Prospects for a Developing Nation

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ABSTRACT

Electronic government (e-gov) has not been implemented as extensively in many developing countries as in developed countries, especially in certain fields, such as occupational safety and health (OSH). This chapter considers e-gov that is effected through the websites of leading OSH bodies in a developing country, Trinidad and Tobago, and two developed nations, the USA and UK. Using a content analysis and comparison exercise, OSH e-gov shortcomings and opportunities in T&T are noted. Improvement recommendations include development of a strategy and strategy execution plan to boost stakeholder recognition of the value of the OSH agency and OSH e-gov in T&T; partnership-building to make resources available for OSH e-gov enhancement; enhanced accessibility and utility via a wider range of media formats to users; better stakeholder responsiveness via engagement with social media and better online support; and increased data collection and analysis in order to drive continual improvement.

INTRODUCTION

It is estimated that almost a third of the US population is comprised of Millenials, a group of youths and young adults who are always connected (Sewake, 2015) to their devices. As a result, this group may also be called the net generation, electronic generation or digital generation (Shih & Allen, 2006), and they have ushered in a communication age that is increasingly online. This group is smart; they use various

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devices and social media resources to inform their purchasing and other decisions as well as to actually make their personal and work transactions more efficiently.

Indeed, in the past few decades, society as a whole has come to embrace electronic technologies more, so that even older adults have become more digitally competent and more reliant on electronic devices such as smart-phones, laptops, and tablets. In some cases, face-to-face communication has been supplanted by electronic communication as they access social media and online news; upload or download photo, video and audio resources; dash off tweets, blog articles, texts, and emails; post reviews and ratings; and share statuses. Government systems have therefore been increasingly embracing electronic modalities in an effort to reach populations more effectively. Through such e-government or e-gov systems, governments seek to leverage the population's electronic connectivity in order to build their awareness, appreciation, and competence and to encourage sharing of attitudes and access to content (Gil-Garcia, Helbig, & Ojo, 2014).

When it comes to ICT access and use, Losh (2013) reports that a digital divide exists not only due to generation differences, but also due to differences in education, gender, and ethnicity in users. One concern that arises with e-gov systems is the disadvantage potentially created for lower socio-economic brackets, whose constrained access to internet and communication technology (ICT) and lower levels of ICT skill reduce their ability to "access and use ICT to promote well-being and prosperity"(United Nations Department of Economic and Social Affairs [UNDESA], 2014, p. 9). Since developing nations reasonably enjoy lower standards of living than developed nations, these lower socio-economic challenges also apply. Thus, developing nations must aggressively work to bridge their ICT gaps (i.e., updating and leveraging ICT technologies and applications), or there is likely to be a widening economic divide between themselves and the first world, which continues to forge ahead with ICT enhancements (Ndou, 2004).

Over the past several years, The Republic of Trinidad and Tobago (T&T), a developing nation, has actively worked toward e-gov system development and rollout in many areas. A 2014 assessment by Nathai-Balkissoon and Pun (2016) identified several shortcomings in the e-government systems for Occupational Safety and Health (OSH) Management. Their view was that OSH had not been a high-priority area, even if the International Labour Organisation [ILO] (2009) recognised it as a critical field of practice for developing companies. With respect to T&T, OSH has an important role to support the efforts of government and industry to diversify the economy from oil and gas, develop more small and medium companies (Nathai-Balkissoon, Maharaj, Guerrero, Mahabir, & Dialsingh, 2017), and support international and regional efforts to provide decent work (ILO, 2017; United Nations Development Programme, 2017). E-gov systems have already proven their utility in boosting safety: social safety in Brazil, food safety in the USA, fisherman safety in T&T (UNDESA, 2014; 2016), and it remains to be seen whether T&T's OSH e-gov system has advanced significantly since the aforementioned 2014 assessment.

In T&T, e-gov has also begun to expand to include OSH matters but more is needed to be truly effective. Updating the work from Nathai-Balkissoon and Pun's assessment, this chapter reports a content analysis that compares the 2017 incarnation of T&T's OSH e-gov site with those of the United States of America (US) and United Kingdom (UK) and suggests how some of the recognised initiatives may be used for T&T's case. The focus is on answering the following research questions:

1. What approaches are used on primary OSH websites of the UK and the US, two of the world's leading OSH and e-government nations, to enable strong OSH e-government?
2. How does T&T's primary OSH website compare to those of the UK and the US?
3. How should the T&T OSH website be enhanced to practice better OSH e-government?

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LITERATURE REVIEW

E-Government

Definition of E-Gov

E-gov is typically defined according to its purpose, but which purpose may vary widely. The World Bank (2011, para.1) provides the following definition:

E-Government' refers to the use by government agencies of information technologies (such as Wide Area Networks, the Internet, and mobile computing) that have the ability to transform relations with citizens, businesses, and other arms of government. These technologies can serve a variety of different ends: better delivery of government services to citizens, improved interactions with business and industry, citizen empowerment through access to information, or more efficient government management.

Though several years have passed since this World Bank definition, e-government seems to have remained focused on similar themes, though there may be more elements of social media and direct interaction with citizens than ever before. According to the United Nations UNDESA (2016), these are the international trends that are now emerging: significantly more countries are using e-government platforms to make services more accessible to the public, to make their public institutions "more inclusive, effective, accountable and transparent" (p. 2) in line with the 2030 Agenda for Sustainable Development, and in particular Sustainable Development Goal 9, and to boost ICT and wireless access to everyone (and especially to those in developing countries).

Areas of Focus of E-Gov

According to the Accenture Institute for Health and Public Service Value (2009), e-gov strategies may be:

1. **Outcome-Focused:** Seeking to bring about social and economic conditions, improving public service efficiency and effectiveness, or gathering customer feedback (see ECOSOC (2015) which highlights the need to study the effects of policies on sustainable development outcomes),
2. **Balance-Focused:** Seeking to measure and ensure reach and accessibility across target sectors or citizen profiles (see UNDESA (2016) reports recommending that information should be comprehensive and balanced so that stakeholders are able to make informed decisions and so that progress takes place across all outcome areas, to maximise synergy),
3. **Engagement-Focused:** Providing networking and education tools to build user connectivity and learning (this was set out by the United Nations General Assembly (2015) in UNDESA (2016)), and
4. **Accountability-Focused:** Enhancing transparency by enabling users to share experiences, results, or track complaints to resolution. This is in line with SDG 16, which calls for institutional accountability among other things. Populations are increasingly having input on the goals and targets to be set and reported upon by governments, and open government data and statistical reports are often made available via e-gov systems (Open Data for Development Network, 2017).

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The UNDESA (2014) and the US Department of Labor [USDOL] (n.d.) focus heavily on serving stakeholders with priority placed on such e-gov-to-stakeholder communication types as G2B (government to business), G2C (government to citizens), and G2G (government to government). Other recognised e-gov interactions include G2N (government to NGOs) and G2E (government to employees) (Fang, 2002). ICT enables sustainable development by improving coordination, communication and collaboration in diverse fields (Zelenika & Pearce, 2013). Even as internet-enabled technologies become more pervasive, it is notable that various electronic technologies such as the television, radio, telephone and Short Message Service (SMS) text messaging listed by Boujarwah (2006) still play notable roles in e-gov operations. Government Information Systems (GIS), the Internet of Things (IoT) and open data are some aspects of the newer technological advancements that have the potential to boost accountability and fight corruption, though there is also a need to ensure that data is trustworthy and safe (Liu and Lin, 2012; Gathungu and Mungai, 2013; Levy and Johns, 2016; Mayernik, 2017).

When addressing the issue of engagement, accessibility is a prime consideration. Sutton (2017) highlights that, beyond developing an aesthetically-pleasing presence that meets user needs, websites should pay special attention to accessibility for disabled populations especially when safety matters are being addressed, not only for reasons of convenience but also in order to proactively manage crisis situations.

E-Gov in T&T

In T&T, the National ICT Company Limited (iGovTT) has been tasked to roll out e-gov services and connect key stakeholders (Government of the Republic of Trinidad and Tobago [GORTT], 2011). GORTT (2012, p. 5) has spoken of "the transformative potential of ICTs and the Internet". This derives partly from the potential for enhanced knowledge management, by bringing pertinent and updated information to stakeholders and promoting individual, group, and even organisational learning (Pemberton & Stonehouse, 2000; Pun & Nathai-Balkissoon, 2011). The country's e-gov outreach includes a TTConnect government portal for all ministries, internet service available at schools and national libraries, GovNeTT intranet connecting government to all Ministries, and a single electronic window (SEW) for lodging trade and transport documents via one electronic access point (GORTT, 2011).

T&T ranked 91st of 193 countries on the UNDESA (2014) e-government development index (EGDI) survey, but two years later its efforts to strengthen its e-gov systems were propelling it forward in world rankings so that its rank charged ahead by 21 places, propelling it into the high EGDI bracket (UNDESA, 2016). T&T's EGDI score was 0.5780 (rank 70) compared to 0.9193 (rank 1) for the UK and 0.8420 (rank 12) for the US. T&T's component scores all increased in 2016 compared to 2014: online service (0.5290 from 0.3307), telecommunication infrastructure (0.4973 from 0.4543) and human capital (0.7077 from 0.6945).

In 2014, T&T was among the top 10 small island developing states (SIDS), but it lagged four smaller Caribbean nations, namely Barbados, Antigua and Bermuda, St. Kitts and Nevis, and Grenada. By 2016, Barbados outperformed T&T in two of the three EGDI components, namely telecommunication infrastructure and human capital, but T&T was second only to Barbados in the region. The online service component was T&T's second strongest component, but it was important, as it considered citizen empowerment, online communication and transactions. If OSH e-gov improved in these areas, it may have been a contributing element toward the improved T&T ranking, though this was not specified in the EGDI report.

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Importance of OSH E-Gov

If not properly addressed, OSH has severe and costly implications for society, government, and businesses (European Agency for Safety and Health at Work [EU-OSHA], 2014; Elsler, Takala, & Remes, 2017). Indeed, the ILO estimates that 3.9% of global GDP is lost as a result of work-related injuries and illnesses (Safety and Health Practitioner, 2017), and Elsler, Takala, & Remes (2017) caution that the cost of work-related accidents and illnesses is proportionally higher for less-developed countries. While OSH may be perceived as a technical field, its practice is critical to promote the safety of all people. Good workplace conditions, like those that may be achieved through proper OSH implementation, yield significant economic gains (EU-OSHA, 2010; Schwab, 2013). Moreover, the ILO (2009) points out that there is a moral imperative to use resources efficiently and to protect workers by properly implementing OSH.

Safety legislation, coupled with supporting guidelines, codes of practice and standards are commonly used worldwide to establish minimum practices and conditions for safety in the workplace. In T&T, the legislation is referred to as "The Occupational Safety and Health Act (2004), as amended (2006)" (the OSH Act) (GORTT, 2004; 2006). T&T's safety practitioners have noted that safety management system implementation varies from sector to sector, and industries are often extrinsically motivated to comply with safety legislation. Extrinsic motivators include, but are not limited to, the modern need to meet tender requirements or win contracts (Energy Chamber of Trinidad and Tobago, 2007) and the time-honoured concern of avoiding sanctions for non-compliance (Gleason & Barnum, 1978). On the other hand, safety management systems may be weaker in some industries, and reasons for this can include unavailability or inaccessibility of expertise/guidance as a result of lower resource availability (Surienty, Hong, & Hung, 2011).

There is a need, therefore, for OSH e-gov systems that sensitise stakeholders and make resources available to support national OSH development (Nathai-Balkissoon & Pun, 2016).

THE METHOD

In the first decade of the 2000s, many studies and papers were published that focused on evaluating e-government websites that served as central portals to a wide range of government services. However, in the second decade, this type of work has declined as general e-gov portals are more commonplace and the guidelines and expertise may by now be well established. Less focus has been placed on evaluating e-government websites dedicated to narrower functions such as Occupational Safety and Health Administration, which is the focus of this chapter. Since little recent guidance is available to carry out an evaluation, some earlier evaluations are used to guide the exercise addressed in this chapter.

E--gov websites may be evaluated by qualitatively observing and quantitatively measuring the sites' performance. Among the areas typically evaluated are outcomes, balance, engagement, and accountability (Accenture Institute for Health and Public Service Value, 2009). The Australian National Audit Office (2004) evaluated website efficiency and effectiveness by looking at costs, benefits, service delivery, productivity, and return on investment measures. It considered issues like user visit patterns, site traffic data, accessibility, usability, information accuracy and usefulness, and stakeholder satisfaction to assess effectiveness. Included in these issues would be the use of websites, databases, videos, audio clips, and social media such as Twitter and Facebook.

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Quantitative data judgements are beyond the scope of the work reported in this chapter, since the focus is on observing how various structural and content elements are being incorporated into the selected websites to promote OSH using e-gov modes. The focus is trained on the uses made of electronic media to ensure site usability (Granizo, Yanez, Ramirez, & Machado, 2011) and accessibility (Abanumy, Al-Badi, & Mayhew, 2005).

Areas of Focus

In this chapter, a simple content analysis approach is used, allowing consideration of elements such as content, intent, messages, and context in order to make judgments about the information sources (Krippendorff, 2004). The judgements made are intended to highlight the similarities and differences between the OSH e-gov site of a developing nation (T&T) and two developed nation sites (the UK and the US). Specifically, the OSH websites' usability and accessibility were evaluated according to three considerations, namely accessibility and support information, provision of technical content for stakeholders, and range and availability of electronic media resources. Figure 1 outlines the sub-elements under the three areas evaluated.

Information Sources

The US OSHA 30-hour general certificate and UK NEBOSH general certificate are among the most popular OSH qualification programmes pursued in T&T, perhaps because many of the country's multinational companies are headquartered in those two nations. In addition, as mentioned earlier, both the UK and the US are highly ranked internationally in the UNDESA's (2016) EGDI. For these reasons, this chapter is structured around comparing the OSH e-gov approaches of the TTOSHA website with those used by the main OSH website of these two nations.

Steps Followed

The actual evaluation followed four main steps, namely evaluation of the UK website, evaluation of the US website, evaluation of the T&T website, and lastly comparison of the T&T website elements to those of the UK and US. The comparison was used to recommend how T&T OSH e-gov could be improved, and to propose further work prospects. Figure 2 provides a summary of the steps followed in the evaluation.

FINDINGS

UK OSH E-Gov

The major OSH legislation in the UK, the Health and Safety at Work (HSW) Act, was implemented in 1974. OSH legislation enforcement, development, and review, as well as some research and statistics generation are performed by the Health and Safety Executive. The UKHSE website (HSE, n.d.), located at www.hse.gov.uk, is briefly evaluated in this section.

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Figure 1. The e-government considerations used to evaluate OSH websites in this study
Source: Nathai-Balkissoon & Pun (2016).

1. Accessibility and Support Information including:
    - Metadata Elements (Site Map/Index/Website Organisation Map/Online glossary)
    - Frequently Asked Questions (FAQ)/Help page/Search feature)
    - Website Accessibility (Catering to Special Needs Users/Inclusiveness/Languages/browser selection/Look and feel of website)
    - Usability (Feedback Gathering/Complaint Filing)
    - Privacy (Registration/Sign-up programmes/confidentiality statements)
    - About Us (History/Background/Focus/Contact Information/National Call Centre)
    - Job vacancies listings/job boards

2. Provision of Technical Content for Stakeholders including:
    - Targeting Stakeholder Categories
    - Treatment of At-Risk Groups
    - Page Links to Law and Regulations
    - Dataset Access/Query Facilities
    - Training Information and Programmes
    - Links to download Free Publications
    - Links to Publications for Purchase
    - Links to other government/non-government bodies in field of OSH
    - Consultations

3. Range and Availability of Electronic Media Resources including:
    - Website URL and Name
    - Sharing/Social media (Facebook/YouTube/Twitter/Google+/Blog/Mobile app/ Rich Site Summary (RSS) feeds)
    - e-newsletters/ e-magazines
    - Posters, PDF documents, and PPT Slideshows
    - Audio recordings/audio podcasts
    - Video recordings/video podcasts
    - Web-based training/virtual seminars
    - A What's New page/Trending topics
    - Currency (Updates)
    - Online Contests

Accessibility and Support

The UKHSE site has a deceptively simple appearance with attractive images on every page and only six main tabs (Home/News/Guidance/About You/About HSE/Contact HSE) separating the content. It is very intricately designed, making broad and deep information freely available to users. Hovering over a tab activates a drop down menu listing several subtopics which the user may select. At the bottom of the homepage runs a ribbon from which support information may also be accessed, including a detailed site map that lists subsections under each tab heading, an A to Z index of topics, and an acronym listing. There are both a search bar at the top of every webpage and a search link built into every page footer ribbon. Additionally, there are search links within some webpages. The "News" dropdown menu appeals to modern access modalities, allowing users to subscribe to e-bulletins and RSS feeds, providing HSE

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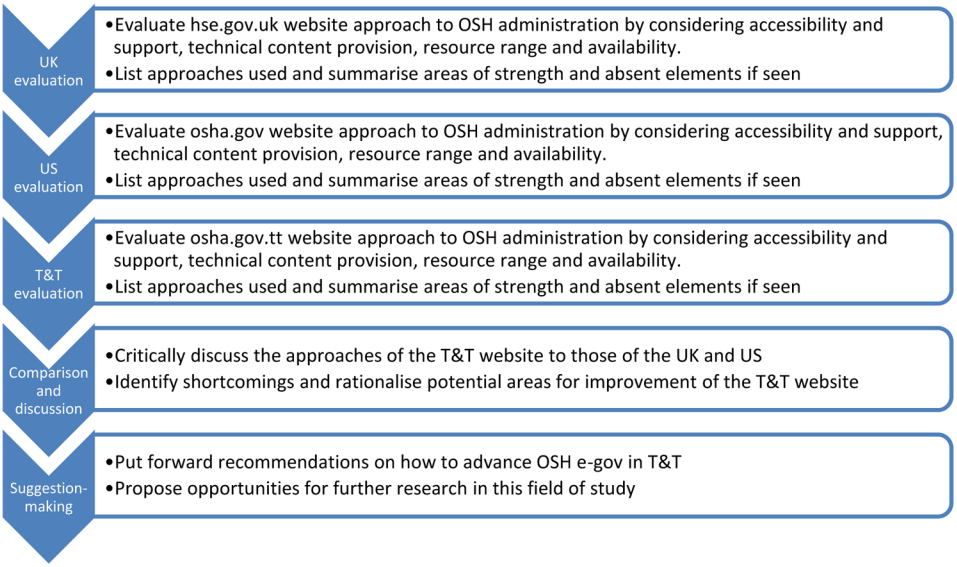
press office links, and archiving HSE press releases. Two features (the "Chair's Blog" and "Health and Safety Myths") are inactive, but remain available as archives via the "News" dropdown menu.

In the "Guidance" webpage, search boxes allow content to be accessed by Industry or Topic. Convenient access to information is also facilitated with a "Frequently asked questions" (FAQ) page and two panels titled "For businesses…" and "For workers…".

Figure 2. The study approach



Meeting the needs of users with disabilities is an obvious priority for the UKHSE. An "Accessibility" tab is prominently placed at the top right of the homepage, and repeated at the bottom right for good measure. The visually impaired and others are able to vary text size, colour schemes, navigate using keyboard instead of mouse, and access captions or transcripts for many videos. There are also tips on improving accessibility when using various browsers. The HSE's Accessibility Policy is shared together with sites such as the BBC's "My Web My Way" (BBC, 2014) and the Web Accessibility Initiative (World Wide Web Consortium, 2012), to provide guidance on how to make the best use of accessibility options for users with communication challenges. The site also allows users to optimise content for viewing on mobile devices. While the website is available in English, the footer bar includes a tool leading the user to information created in 19 other languages. Besides, the site is open access and only requires an e-mail address if a user wants to subscribe for free updates. There is an "About You" panel that appears to the left of the "Accessibility" page. It provides general information that users may seek, such as copyright and disclaimer statements.

A special effort has been made to simplify the process of giving feedback throughout the site; on each page there is a "Rate this page" tool that a user could use to award between zero and five stars to any webpage within the site. This is immediately followed with the option to select a reason for the rating given by choosing from among five options that present themselves. The HSE also seems to value open data sharing, since it makes its website usage statistics readily available as well. The UKHSE site actively

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encourages user feedback, with a section of the "Contact HSE" page supporting lodging of complaints about HSE services. The complaints handling procedure is also outlined on the webpage. Also, reporting concerns about OSH in the workplace is possible via several online forms.

The "About HSE" webpage provides information about HSE history, work focus, strategy and plans, board and senior management, organisation structure, stakeholder collaborations, and annual reports. Clicking on the "Contact HSE" tab opens a main webpage organised into several boxes, many with attractive graphics related to one of a series of reasons to contact HSE and providing links for reporting and other communications. There is also a "Careers" section that details individual vacancies, and "HSE Jobs eBulletin" updates can be accessed through e-mail updates. The "Ways to contact HSE" link shares telephone contact information and allows use of an online advice form, but an email contact was not readily seen.

Provision of Technical Content for Stakeholders

The site targets workers, employers, and other audience groups through "Are you…" and "How to…" drop down links in the "About you" tab. In the "Guidance" tab, sample risk assessments, interactive tools, and templates provide help that fits SME industry profiles. User targeting is also evident from the provision of materials about protection of at-risk groups, specifically children, young workers, expectant or new mothers, and those at risk of infection. Users are able to access legislation and related content via the website. The "About HSE" tab includes links to all Acts owned and enforced by the HSE, and legislation explanations, news, and supporting information are shared via additional links. Approved Codes of Practice and guidelines to aid stakeholders in complying with statutory requirements are also shared in the "HSE's work" panel, via the "Legislation" link.

A "Statistics" page is available within the "About HSE" page. The links within this page allow users to access annual UK statistics summary reports, search for data, graphs, and reports by topic. In 2014, a "HandS-On" Statistics Data Tool was available for injury and ill health data access and manipulation, but this could not be located in this 2017 review. The HSE also provides a "Shared Research" link on the page, inviting sponsorship and other collaboration to conduct research projects on important health and safety themes. Technical materials abound on the site, and are mainly available through the "Resources" tab. Users may download PDF brochures providing information about duties, as well as implementation guidelines. Links to Government, legal, publication, statistics collection, IOSH and EU-OSHA websites are also provided at various points.

Range and Availability of Electronic Media Resources

The HSE site incorporates several electronic media types. HSE site content (e.g., RSS feeds) is compatible with and accessible via several mobile apps. In terms of HSE-created apps, only one (that supports land use planning) seems to have been rolled out to date. HSE news may also be received by Twitter, e-mail, and third party mobile apps. Sharing of content takes place via the HSE Press Office Twitter account "@H_S_E", and users may also e-mail and print content. The HSE Chair no longer appears to have an operational blog.

Users would find it easy to stay abreast of changes in the field and new materials being shared if they visit the "What's new in free leaflets" page (available via the path "Guidance>Resources>What's new in free leaflets") or subscribe to any of scores of e-bulletins based on user categories, industries, topics,

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resource types, news, and other selections. E-bulletins are available by e-mail, podcast, RSS, or SMS text message to share breaking news and core OSH material by industry category or topic, and even statistics. Archived and current newsletters, leaflets and news feeds are also available by RSS. Links in the "News" tab provide access to press releases and regional press releases.

Some critical leaflets and the health and safety law general information poster are also available in MP3 audio format and are referred to as "Talking Leaflets." Short "WorkSmart" videos have been developed as part of safety campaigns; these and several longer videos are available to tell stories, share first-person perspectives, and create big impact on the viewer. A health and safety law poster, several hazard-recognition and mitigation posters, PowerPoint slideshows and pdf publications are all available for free download. The HSE also makes available a guideline book called the "Health and Safety Toolbox", which may be physically purchased or downloaded free of charge. It is supplemented with free e-learning materials through "the health and safety toolbox microsite." The site uses "How Do I?" and "I work in..." prompts to customise material to users' drop-down menu responses. Many case studies, publications, and research outcomes are shared through the website to highlight poor as well as good practices, and to enhance user understanding and learning.

US OSH E-Gov

In the US, OSH legislation is headed up by an Occupational Safety and Health Act, which was passed in 1970. Through it, the USOSHA has functioned as the agency responsible for enforcement, outreach and several other duties related to OSH. Subordinate to the USDOL, USOSHA uses several electronic manifestations, including its website www.osha.gov (OSHA, n.d.), to support its e-gov efforts.

Accessibility and Support

The USOSHA site has a busy design and is full of content that is largely structured across nine tabs (About OSHA/Workers/Employers/Regulations/Enforcement/Topics/News & Publications/Data/ Training). There is now the ability to hover over tabs to preview subsections as is the case with the UKHSE site, and clicking on a subsection link loads various webpages directly. As this site is very comprehensive and wide-ranging, the focus in this section is to point out some of the main features of the USOSHA site.

While there is no site map, there is an A to Z index of topics. Users may perform searches using a search box at top right of every webpage or, via the "Topics" tab, they may access the site's searchable "Safety and Health Topics Pages". Finally, convenient access to popular query responses is supported through the "Topics" FAQ page, which is also available in the ribbon at the bottom of each webpage. The "Workers" tab also provides a link to "Worker FAQs". At the top left of all FAQ pages, users are given additional options to "Search OSHA" and "Ask OSHA". The USOSHA homepage makes use of a large and prominent image carousel that features four of USOSHA's highest priority, current issues. In a season where heat stroke and extreme stormy weather both challenged the US, two of the carousel issues were dedicated to heat safety and hurricanes. The other two issues were the proposed amendment of a standard and the site's new ability to support electronic reporting of injuries and illnesses. Hovering over an image indicator button pauses the image rotation, allowing the user to review the image at leisure.

The USOSHA site boosts accessibility to users by allowing viewing in either English or Spanish and also provides a few documents in up to 12 other languages. Transcripts are available for many audio and video documents. The site's accessibility notice directs users to the DOL webmaster's email to obtain help

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with any problems experienced while using assistive devices such as a screen- or Braille-reader. A link to the Freedom of Information Act is also included at the bottom of the page, committing to provide all information requested in writing, subject to certain named, legislated exceptions. No sign in or registration is required to use the site, and only an e-mail address is needed if subscribing to receive free updates.

The "About OSHA" webpage provides plenty of useful information, including mission, organization structure, leadership, and strategy of the USDOL and/or OSHA. On the page, there is a "Contact Us" link that provides e-mail, phone, and postal contact details. A myriad of ways to connect with USOSHA are listed as well, including Facebook, twitter, YouTube, Instagram, Flickr, RSS feeds, and newsletter subscriptions by email. Finally, a "Careers" link redirects to a page of DOL job opportunities. USOSHA provides many options for users to give feedback and lodge complaints. Users who wish to lodge a complaint are specifically instructed to phone OSHA directly. There are also links to report broken hyperlinks and make quality correction requests within the "Contact Us" webpage.

Excellent support is also provided for users who wish to share OSH-related reports. The "Employers" and "Contact Us" tabs allow injuries, illnesses, and fatalities to be reported via phone, fax, or an online form. The "Workers" tab and "Contact Us" tabs provide email, online, and phone/fax routes for workers seeking to file safety and health complaints or even whistle-blower complaints. USOSHA prominently outlines its commitment to workers experiencing employer retaliation after filing a complaint.

It is admirable that USOSHA boosts material usability by presenting a wide range of data and information. Links take users to sites that provide raw/original sources of data, fact sheets, statistics reports, and even visualisations that range from charts, graphs, tables, and even maps in html and pdf formats.

Provision of Technical Content for Stakeholders

The USOSHA website focuses primarily on workers and employers, and also provides material that would be of use to those performing training and consultancy roles. On-site consultation is available free of charge, especially for small and medium enterprises (SMEs) seeking OSH compliance help, and an interactive US map is provided to help employers locate their local consultation offices. There is also a QuickStart compliance assistance tool that focuses on the employer groups of most concern to OSHA – small businesses, general industry, construction, and health care. At-risk groups are the focus of materials provided to address protection of young workers, pregnant women, and those at risk of exposure to bloodborne pathogens and violence.

In terms of legislation and related documentation, the website included links to the OSH Act, Federal Regulations information, and the full range of OSHA Standards. The site encourages public consultation by placing a link to items that are "Open for comment". Via the "Data" tab, downloadable data packets are available by year, and work-related injury and illness data are reported according to various focal areas (e.g. industry, state, and year). Statistics links sometimes connect the user to other government sites, such as the Bureau of Labour Statistics and the US Census Bureau, putting original data and statistics at user fingertips.

Free OSHA and other training materials are available through links provided. Additionally, there are several free subject-specific web-based training tools and checklists. The USOSHA site points users to several USOSHA-administered training programmes, and best-practice information is also shared for OSH trainers to improve their effectiveness. Detailed html and/or pdf publications are downloadable on a wide range of topics and there are also a few downloadable e-books. "New Items" and "Hot Topics" are given prominent blocks on the "Publications" page and there is also a "What's New" page under the

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"News & Publications" tab. The publication listing is searchable and users may order for publications online, by phone, or by mail, if hard copies are desired.

Though not easily located on the site, a search revealed a page that features OSHA international collaborations up to 2015, and links to international organisations such as the ILO, EU-OSHA, and the World Health Organisation (WHO). Hyperlinks are provided to main USDOL and other US government websites, campaign partner sites (e.g. NIOSH), and OSHA training institute education centres.

Range and Availability of Electronic Media Resources

RSS Feeds are available for users who want updates from the Federal Register, interpretations of regulations, news releases and the free QuickTakes newsletter. This newsletter is also available by e-mail. The website's "What's new" page and Twitter account highlight the latest updates and a "News Releases" page provides releases sorted by topic, and fully searchable within the page.

The site's resources support training and awareness, too, using scores of free, high quality items that are available for download via the "Training" and "Publications" webpages. The materials ranged from very impressive training videos (real-life and animated), photos, pictograms, newsletters, slideshows, forms, reports, text documents, and brochures to laminatable wallet cards and QuickCards, bulletins, posters, transcripts, e-books, booklets, and even bookmarks. Electronic materials included an extensive array of mp4, pdf, html, mp3, gif, eps, jpg/jpeg, epub, mobi, ppt, doc and xls formats.

T&T OSH E-Gov

TTOSHA is the national focal point for OSH in T&T. In T&T, there exists a single access point at www.ttconnect.gov.tt to provide e-gov services to the public. The Ministry of Labour and Small Enterprise Development links to TTOSHA, its subordinate agency, through a "Become OSHA Compliant" link on its www.molsmed.gov.tt website. The eGovernment approaches of the TTOSHA site www.osha.gov.tt (Occupational Safety and Health Authority and Agency, 2011) are evaluated in the next section.

Accessibility and Support

The TTOSHA website content is only available in English and is freely accessible by any users. Hovering over some of the site's nine tabs (Home/About Us/OSHA Services/Enforcement/Legal Requirements/ News and Events/Careers/ Contact Us/Resources) activates drop-down menus, while clicking on some tabs opens webpages not included in the drop-down menu. On the homepage, a five-image carousel draws attention just below the main menu bar. The image topics are Refusal to Work (which leads to a one-page document), Request for Proposals (which leads to a page that is also available under the main menu tab "OSHA Services", Job Vacancies (connecting to the "Careers" main menu page), and Protect Yourself at Work followed by Safety and Health (both of which do not redirect the user beyond the homepage). The carousel includes five indicator buttons, but there is no way to pause the carousel. The page does not appear to be updated regularly, as half of the homepage is dedicated to promoting the National OSH Week, which passed over four months ago.

No specific resources have been included to enhance accessibility for different user needs. To find information, users must browse the content or use the search box at the top right of every webpage. There are no FAQ, index, site map, rating tool, feedback link, or online feedback form, but there are OSHA

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telephone and fax numbers as well as a telephone hotline. Also, there are no e-mail addresses listed on the site so a user wishing to contact TTOSHA can only do so by phone, fax, or in person.

The "About Us" page gives an overview of the focus and functions of both the OSH Authority and its enforcement arm, the OSH Agency. This section presents brief value, vision, and mission statements, and lists executive-level office holders. An entire tab is dedicated to careers, although there are no drop-down items. Copyright, terms of use, and privacy information are located via the webpage footer. Also, a ticker tape runs across the base of the homepage. It features links to some interesting OSH magazine articles available at www.ohsonline.com.

Close to the bottom of the homepage, four pictographs (titled Health & Safety, Hotline, Safety Corner, and Tenders) are prominently placed, though two contain no useful information and do not redirect elsewhere. One pictograph shares TTOSHA's hotline number, and the last redirects to the Request for Proposals page available via the main menu bar and the image carousel (both also on the homepage). It is notable that one of the proposals requested was for development of the TTOSHA website.

Provision of Technical Content for Stakeholders

Under "Enforcement", webpages reflected OSH Act duties and/or rights of four stakeholder categories, namely employers, occupiers, employees, and the final group, importers, designers, and suppliers. No materials specifically focusing on at risk groups were available on the site. In "Legal Requirements", an OSH Act link leads to a short piece about the act and hyperlinks to a few older regulations that are still in force. There is no link to allow users to find and read the OSH Act itself, but excerpts are available under "Resources" to inform users of requirements related to accidents, major construction work, occupational disease, and injury. Clicking the "Resources" tab opens a page that provides links to local and foreign stakeholders as well as the websites of other OSH institutions and related organisations.

Other than the 10 brochures available for download (two others are shown but not downloadable) within the "Resources" tab, there are no training-related materials available. The site has no e-commerce capability, nor does it offer material for purchase in any other way. There is a noticeable absence of statistics on the site, as well. While webpages (namely OSHA Accidents, OSHA Inspections, OSHA Inspections Breakdown, and OSHA Activities) are reserved under the Resources>Research and Data link, these have remained empty since at least 2014. Besides, clicking on the "Resources" tab brings up a page titled "Stakeholders" with links to local, regional and international stakeholder websites. Some additional technical resources may be located by users who take the time to look for them.

Range and Availability of Electronic Media Resources

There are limited resource types in use on the website. Social media buttons are notably absent from the site and TTOSHA does not appear to yet have a presence of its own on social media sites, blogs, mobile apps, or e-newsletters. An RSS icon does appear at the bottom of the homepage within the ticker tape, but this RSS feed links to articles from another organisation, the OHS online magazine. The only available documents are 10 of the 12 brochures mentioned before, and they come in one of either png or pdf formats. Audio and video files, posters, slideshows, and web-based training materials are not yet available on the site either. A search for various file formats did not reveal any other materials as being available on the site.

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A "News and Events" tab leads to a calendar, a short "News and Events" page, and a photo gallery. The calendar is unmarked for every month of 2017, the last news piece advertised the National OSH Week that passed over four months ago, and the photos appear dated, several reflecting the culture of the organisation and T&T, rather than OSH matters. The website does not allow subscription to updates or news.

COMPARING T&T'S WEBSITE TO THE UK AND US WEBSITES

It would be reasonably expected that given their significantly longer years of experience with developing and using their own OSH e-gov systems, as well as their greater resource bases, the UK and US OSH e-gov websites would be considerably more advanced than that of T&T. Thus, value can be derived by critically examining the gap between the TTOSHA site and the other two, in order to identify what improvements could be effected. The TTOSHA website is functional, and undoubtedly offers a beneficial service to stakeholders who use it. However, it is much more basic than the UKHSE and USOSHA websites. In terms of accessibility and utility, both the UK and the US sites appear much more user-oriented and performance-driven than the T&T site, as discussed in this section.

TTOSHA should be aiming to provide its stakeholders with convenient access to useful, relevant information. Currently, even some of the most basic information remains absent from or significantly lacking on the site. Although some improvements to TTOSHA have been noted since 2014, in comparison to the UKHSE site, TTOSHA still uses few pictures to boost site appeal, and too many tabs are being used to span the limited offerings currently available on the site. Further, TTOSHA has not stepped up enough to capture the attention of its stakeholders and prove its relevance/value to them; resource searchability, regular news updates/advisories/press releases and social media modalities are severely lacking, and OSH events are not regularly scheduled and advertised.

According to the HSE (2003), guidelines are necessary to help users interpret and comply with legislative requirements and to give them technical advice that might make legislated requirements better understood. While the TTOSHA site makes some guidelines available as free brochures, these are too limited in topic scope and number to adequately meet stakeholder needs. TTOSHA does not provide users with sufficient information about the OSH Act, interpretations of the intent and mandates of the OSH Act, and standards, codes of practice, or enough guidelines to assist users with understanding and complying with the OSH Act's requirements. Perhaps most surprising is the absence of a link to the OSH Act, even though TTOSHA is the lead body responsible for OSH in T&T. It is not clear why this is so, since the country maintains a hyperlinked repository of all of its laws within its legal affairs website (Ministry of Legal Affairs, 2013). In terms of materials targeted to various stakeholder groups, there are only 10 downloadable brochures and there is no facility for filtering of information depending on the type of user visiting the TTOSHA site.

In comparison, the UKHSE and/or USOSHA provide such a breadth of materials (e.g. legislation, standards, codes of practice, interactive tools, books, videos, audio files, slideshows, pictures, bookmarks, summary cards, maps, tables, graphs, and charts) that there is no doubt that the needs of workers (and especially at-risk groups like young workers and pregnant women), employers, and trainers are more than adequately supported. Choices abound so the developed-nation users can access answers or locate resources using a search bar, site map, index, glossary, or FAQ pages.

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Considering that some of today's trends include a convenience mentality and technology assimilation into everyday life, the range of media files shared on the TTOSHA site is far too limited; only pdf and png files were available. TTOSHA must be cognisant of the fact that a large portion of the T&T population are digital natives: tech-savvy users who remain ever-connected via social media and other online modalities (Prensky, 2001; Palfrey & Gasser, 2008). They are likely to be accessing much of their information and connecting with others through their mobile devices rather than face-to-face. Building a culture of safety is critical for the long-term well-being of the workforce (McTernan, Dollard, Tuckey, & Vandenberg, 2016) and the economic stability of the country (EU-OSHA, 2010), and so TTOSHA needs to build lasting connections, especially with the country's younger workers. TTOSHA has no social media accounts, although these may be created at no cost and in short time. In comparison, UKHSE and USOSHA users are able to download files of different types, tap into options available via social media like YouTube, Twitter, Facebook, and email/RSS, and obtain resources by printing immediately or ordering right off the site, for convenience. No mobile apps have been created to enhance TTOSHA's connectivity with the T&T population, though it should be noted that apps would be more time-consuming and costly to create as they must be planned and created as original works. Also it is interesting to note that the three apps that were observed in use by USOSHA in 2014 appear to have fallen out of common use now. Also, if TTOSHA seeks to build a pro-safety culture, it is important that at least some of its materials reflect cultural elements from T&T. This will not be achieved if the only subscribable materials are sourced from developed nations, and no original articles are created by TTOSHA itself.

Tailoring the TTOSHA site to the needs of users also speaks the issue of accessibility for persons with disabilities. The UKHSE has done an excellent job of this, and the USOSHA has also adequately focused on this area, not only designing the site to boost accessibility, but also providing users with ways of reporting and obtaining help with any challenges they may face while using the sites. However, the TTOSHA site does not highlight the extent to which it has considered access by users with disabilities. Given that there is an increasing international focus on equal access for all persons without exception – consider Sustainable Development Goal 10 which targets reduction of inequality, including for persons with disabilities (United Nations, 2017) – this is an area where TTOSHA must do more. The site's lack of special accessibility features would significantly limit communication-challenged users' options to tweak the site's appearance and modes of use, give positive and negative feedback and receive TTOSHA responses online. Also, with only phone and fax contacts provided, and no online feedback or complaint tool available, users may not perceive sufficient interest from TTOSHA in supporting user needs. Ultimately, TTOSHA should be seeking to build pervasive and deep user relationships. According to Maxwell and Carboni (2017), increased social engagement can come about when organisations enable effective two-way communication.

Responsiveness and currency also sets the developed-nation sites apart from the TTOSHA site. According to Vikas (2017), ICT is increasingly being intertwined with on-site operations to notify populations of imminent threats and keep them informed about emergency response actions. The TTOSHA site could have been used in a similar way to the USOSHA site to bring updates related to floods, storms, and hurricanes during the hurricane season. Another concern was the impression that the TTOSHA site is infrequently updated, so that irrelevant information may remain too long on the site, or content may be absent for too long from the site. For example, the site should not be advertising National OSH week many months after the event has passed, and the links within the Data and Statistics tab should not have been allowed to lie fallow for years without either removing the time-wasting links or ensuring that the links would lead to some relevant resources.

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Additionally, no materials are available for sale online and the site's lack of e-commerce capability is another way in which it contrasts with the other two sites evaluated in this chapter. As T&T becomes even more resource-constrained in the face of a declining economy (Sorias, 2015), agencies such as OSHA will face greater and greater challenges to do much with little. Generating income for itself is one option that TTOSHA should explore, and selling resources via the TTOSHA site should be the first step in that direction.

Finally, the site does not focus enough on strategy and performance. The site provides a good overview of TTOSHA organisation and roles but little information about its strategies or objective details of its approaches and achievements. Of note, some of the site content reflects a need for TTOSHA to clearly establish what it wants to achieve through the TTOSHA site, relocate photos not related to OSH to an intranet or offsite archive, and regularly update site content so that past events do not remain central themes. These shortcomings erode the picture of competence that should consistently be painted by TTOSHA. TTOSHA clearly intends to focus on OSH statistics since its site already includes research and data links, but the raw data and informational reports that abound on the UK and US sites are still totally absent on the TTOSHA site. As Podgorski (2015) points out, lagging and leading safety indicators have critical roles to play in OSH management. If TTOSHA wants stakeholders to adopt values including accountability, traceability, and currency, then its site offerings must consistently model these.

It is notable that both the UK and the US sites have been in existence for decades longer than the TTOSHA site, and the OSH Act has only been in existence for some 10 years in comparison to the UK's and US' Acts which have been in existence for almost 50 years. Both the UK and the US are technologically advanced countries, given their developed-nation status. Some may believe that the limitations of the TTOSHA site should be accepted simply because of the understandable challenges faced by TTOSHA. This should never be the case, lest the site's lagging state become permanent.

RECOMMENDATIONS TO IMPROVE T&T OSH E-GOV

It is clear from the discussed shortcomings and opportunities that OSH e-gov should be improved in the TTOSHA context. The following recommendations, while geared towards T&T and TTOSHA, could also inform other developing nations who seek to enhance the structure and effectiveness of their own OSH e-gov systems.

Develop a Comprehensive TTOSHA Strategy and Strategy Execution Plan

TTOSHA will be hard-pressed to achieve excellence unless it takes the time to define its values, understand the pros and cons of its current position, craft its long-term strategy, and plan how to roll out that strategy. TTOSHA's e-gov approach must be set within this broader strategy and should play a prominent role. Establishing a list of priorities informed by a consideration of costs and benefits must lead to the development of a phased implementation approach to be faithfully rolled out. This approach will help TTOSHA to convert an overwhelming list to one that is logical and achievable over time.

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Take Stock of TTOSHA Resource Limitations and Create Partnerships to Bolster Resources

As TTOSHA plans its approach to improve OSH e-gov, the issue of limited resources must be proactively addressed. Currently, resource shortages seem to constrain the agency's ability to create materials, or perform outreach, consultations, inspections and enforcement as much as it would like. Partnering with NGOs, private sector companies, manufacturers' associations, consultants and trainers, auditors, and other regional and international OSH bodies could prove advantageous. Such partnerships could help TTOSHA to develop a network of experts who could provide useful services to support its work. It could deepen society's recognition of and respect for TTOSHA's purpose. It could facilitate sharing of resources, such as training videos and reports that OSHA could share on its website. Also, collaborations could enhance goodwill and trust, and boost buy-in to OSHA's message.

Boost OSHA's Visibility by Promoting Its Value Proposition

TTOSHA needs to establish itself as the go-to body for individuals and organisations that need to report on OSH occurrences or to obtain OSH guidance or resources. The response of employers and workers to TTOSHA has been lukewarm, perhaps because they have not been able to see any advantages to strengthening ties with the agency. The fact is that certain OSH bodies such as the USOSHA, UKOSHA and even EU-OSHA have become highly relevant to stakeholders. To follow suit, TTOSHA must sensitise stakeholders about why OSH is ethically and economically relevant, shine a light on its offerings and mandates, and underscore its role in voluntary compliance work as well as enforcement efforts.

The agency must use the TTOSHA website to its advantage in carrying out this work. Press releases and news articles must be regularly crafted and visibly posted on the site. Periods of intensive focus on certain industries might be advertised on the homepage, so that companies are encouraged to keep their OSH systems compliant with the legislation. Notices of legal action taken in cases of non-compliance, photos and reports of safety excellence, and safety datasets and statistical reports should be conspicuously available and constantly updated to promote a philosophy of natural justice. Stakeholder partnerships should be developed, leveraged, and publicised to enhance TTOSHA's reach and impact.

Embrace the Digital Age

As Hood & Margetts recognised since 2007, in this digital age there must be increased reliance on modern technology. TTOSHA's success will depend in part on its effective use of its website and other digital media to connect with, engage, and serve its stakeholders. It must become highly creative and responsive in an age where many users expect service providers to cater to every customer need with customisation and excellent levels of responsiveness. As TTOSHA add social media elements to its e-gov approach, it would be important to gauge the success of each new addition. Only those that prove valuable should be retained; there is no need to jump on the bandwagon with every new tool that becomes popular. It is far more important to maintain a current and relevant presence for each of TTOSHA's selected social media faces.

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Ensure That TTOSHA's E-Gov Presence Is Relevant, Current, and of High Quality

TTTOSHA's website should be full of content that serves the needs of its stakeholders. To be relevant, TTOSHA must identify who its stakeholders are, as well as what the needs of each stakeholder group would be. Certainly workers and employers must be considered, but there would be certain industries (e.g. construction, small and medium enterprises) that would be more at-risk or more resource-strapped than others, just as there would be certain worker groups (e.g. lone workers, pregnant women, young workers) who would be placed at greater risk. As a minimum, support materials on the TTOSHA website should be varied in format (in addition to brochures/booklets, there should be videos, audio files, photos, guidelines, and analytical reports at the very least) to appeal to different user needs and learning styles and in type (pdf, jpeg, ppt, doc, xls, html, mp3, mp4, and epub are among the very commonly used file types) to offer choice. The website should also encourage users to send feedback in real time, for example by including links so user can lodge complaints, suggestions and even accident/injury reports at the click of a button.

Website content should be regularly updated so that outdated content is removed and older information gives way to interesting new content that keeps users interested in returning to obtain more insights or learn more. Dated content will lead to waning user interest, and less interaction with the site.

Also there must be a focus on applying high quality standards to everything that is posted on the site and to the website's design itself. Resources should contain no errors, and there should be prompt corrective action if an error is seen. The website should have no redundancy and there should be no dead links; these would erode user confidence in the agency itself. A high quality agency must be reflected in high quality operations, even those that are digital in nature.

Focus on Data Collection and Measurement

Data management and analytics must play a huge role in TTOSHA's operations to set targets and track performance of its e-gov system. In line with recommendations from Chen and Hsieh (2014), TTOSHA must determine what it wishes to measure, what sources of data it will use, who might be partners in this undertaking, how to guard against security and privacy risks, and how reporting should be structured. Also, since insightful and responsible data management would have a major impact on the effectiveness of TTOSHA, it should be a priority to recruit a skilled and ethical specialist who would be dedicated to this work. A focus on performance and measurement is also critical since TTOSHA must set the standard that users would be expected to emulate. Podgorski (2015) explains the role of both leading and lagging performance indicators, and TTOSHA should craft an indicator dashboard to report on its achievements and targets.

Guard Against a Digital Divide

Liptrott (2016) cautions that if socio-economic challenges prevent people from developing IT skills, this can hinder their ability to equally access digital resources. Similarly, if computers or internet access are unavailable or less available, the phenomenon of a digital divide will manifest itself, effectively disempowering certain subsets of the population. Thus it is critical that TTOSHA takes action to push against these challenges, through means that could include the creation of local wi-fi hotspots (e.g. in

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community centres) and/or use of OSH caravans that travel the country to interact with and connect with communities. Also TTOSHA should ensure that users with disabilities are adequately supported, as groups like them may be more at risk for occupational injury and illness than many others.

Develop an Improvement Focus

TTOSHA's e-gov approach, no matter how well planned, will have to be adjusted over time. Embedding continual improvement within the approach to website maintenance will be critical so that the website design and content can be improved incrementally over time. Small changes may not be noticeable when considered individually, but over time, many small changes can deliver meaningful value. In this regard, it is important to encourage online and offline feedback to allow for stakeholder critique and suggestions regarding the website and materials. Feedback from TTOSHA's employees would be especially valuable, given their knowledge of the agency's purpose and challenges.

Aggressively Support OSH Compliance in T&T

Achieving OSH compliance would be a high priority for TTOSHA, so its e-gov approach must aggressively support this. TTOSHA must ensure that its website reflects its philosophy about how to go about the business of boosting compliance. TTOSHA must consider whether T&T's safety culture is one that responds better to encouraging compliance, whether it would only step up when strict enforcement and sanctions are instituted, or whether some well-defined middle ground is to obtain. If certain industries approach OSH compliance with a laissez-faire attitude, TTOSHA may need to consider using a contingency model: stricter approaches used for industries that are less intrinsically motivated to comply, and more trusting approaches used for industries that prove themselves to be committed to compliance.

FUTURE RESEARCH DIRECTIONS

Only qualitative data was used in conducting this study. Sourcing quantitative data about user demographics, usability, accessibility, and user needs could provide insight into the validity of existing site design and the efficiency of site performance. Insight from stakeholder complaints and suggestions would also lead to design improvements focused on improving OSH e-gov effectiveness. Specific to T&T, the collection and analysis of these data would bring about a deeper understanding of the impact of OSH e-gov, and would be instructive in planning further development of the TTOSHA website and other e-gov tools.

The developed-nation evaluation focused on only two OSH e-gov websites. A wider review and content analysis based on additional international OSH governmental and non-governmental websites could also be beneficial. A broader study may recognise additional e-gov best-practices to emulate. Evaluating how practices vary in first- and third-world settings could also enhance appreciation of how practices may vary in different cultures.

While e-gov is popularly studied, only limited research happens within the OSH e-gov sub-field. More research about design and application of OSH e-gov systems is warranted, as this would identify and share varying thinking and approaches in the field. Of particular relevance would be studies that look at the use of mobile systems in OSH e-gov, as populations of most countries are increasingly connecting to webpages and mobile apps for information, communication, and entertainment.

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Partnering between TTOSHA and higher education institutions can be beneficial to both parties, as the latter can analyse rich data already held by the former, saving TTOSHA from having to hire analysts, and reducing costs and research timelines for the researchers. In addition to data analysis, researchers with writing competencies may be able to help create training and outreach resources for the TTOSHA site.

CONCLUSION

Work is becoming inherently more risky to worker safety and health, particularly as complex mechanisation increases and people juggle more distractions, work faster, and produce more. As populations grow and resource availability is constrained, the government is rolling out more modern IT-enabled means of connecting with citizens and providing public service access. This study has recognised that, notwithstanding admirable levels of e-government advancement in T&T in recent years, OSH e-government has remained stunted. This shortcoming limits the population's ability to access OSH information, improve OSH practice, and build a symbiotic relationship with TTOSHA.

This study supports advancement of TTOSHA's work. It has evaluated several features of two developed-nation OSH e-gov websites, identifying how value is delivered to workers, employers, and other stakeholders. With these best practices in mind, recommendations for achieving OSH e-gov excellence have been made to TTOSHA. These especially take into account the need for TTOSHA to modernise its approach, clearly define its purpose and values, and develop/tailor/share resources to promote and enhance OSH competence, commitment, and involvement of various stakeholder groups. Developing and maintaining a sustainable OSH e-gov presence would be a very involved task, but a proper roll-out as a phased project would add immediate value.

This work could inform efforts of government and other local OSH organisations seeking to craft a meaningful electronic presence. It could enhance understanding and provide support to employers, employees, employee representatives, and the wider public, weaving good OSH practice into everyday living. Further, the chapter provides good insight into developed-nation OSH e-gov practices to ICT practitioners as well as developing-nation governments seeking to improve their own OSH e-gov systems. Finally, this work has pointed out the need for further study in this area and proposed some ideas for deepening research that can enhance understanding and practice in the field of OSH e-government in developed and developing nation contexts.

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KEY TERMS AND DEFINITIONS

E-Government: The use of electronic technology, more commonly called information technology to connect government agencies to stakeholders in order to help government meet its goals related to service delivery, interaction, information sharing, and other aspects of governance.

Image Carousel: A website navigation option that shows a set of pictures in sequence, with further levels of information being revealed about clicked images if they are attached to hyperlinks.

Menu: An array of options offered to users of a website, usually arranged horizontally across the width of the webpage.

OSH E-Government: E-government specifically designed for and focused on furthering occupational safety and health aims in a country.

Ribbon: A narrow (colored) menu bar that offers page options to users on a website.

TTOSHA: An acronym used in the chapter to refer to the primary OSH e-government website of Trinidad and Tobago.

UKHSE: An acronym used in the chapter to refer to the primary OSH e-government website of the United Kingdom.

USOSHA: An acronym used in the chapter to refer to the primary OSH e-government website of the United States of America.

Website Effectiveness: An aspect of website evaluation that could judge elements such as ease of access, ease of use, information utility, and user satisfaction.

Website Efficiency: An aspect of website evaluation that could judge elements related to maximizing resource usage, including productivity, return on investment, costs, and benefits.

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Chapter 106
Trends in Macroergonomics Applications for Improved Work Systems

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ABSTRACT

Macroergonomics is the subdiscipline of ergonomics that is concerned with the analysis, design, and evaluation of work systems. It means, macroergonomics focuses on harmonizing the organizational structure of a company and not only one workstation or one task, as microergonomics does. Macroergonomics is a top-down, middle-out, and bottom-up approach. In the top-down approach, the overall general work system structure may be prescribed to match the organization's sociotechnical characteristics. On the other hand, the middle-out approach focuses on the analysis of subsystems and work processes, which can be assessed both up and down the organizational hierarchy from intermediate levels, and also, up and down some changes may be done to ensure the work system design is harmonized. Finally, the bottom-up approach comprises an extensive participation of employees in the identification of problems. Currently, macroergonomics is considered an emergent subdiscipline, and there is the need to promote current theories and methods and propose new ones.

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INTRODUCTION

Traditionally, work systems have been the focus of attention with the aim of increasing productivity. Here, it is principally from the economic perspective and is focused to obtain profits considering a purely consumption approach. However, this has evolved considering human and social aspects in such a way that economic advantages are put at the same level that the promotion of positive changes on individual and collective work environments. It is seen when organizations have adapted the work system conditions to the limitations, abilities and needs of their employees. One result of this view is Ergonomics, which arises supporting the design of products and systems enhancing human well-being and performance (Hassall, Xiao, Sanderson, & Neal, 2015).

Consequently, Macroergonomics, as a nested discipline of Ergonomics, emerges basically with the aim of design a fully "harmonized" work system enhancing the key performance indicators (organizational effectiveness, productivity and satisfaction). Herein the sociotechnical systems theory was the fundamental principle, and the industrial and organizational psychology viewpoints were also included (Lauren A. Murphy, Robertson, & Carayon, 2014). Thus, the macroergonomics approach mostly studies the interaction between the elements (machine, environment, software, job and organization) within the work system.

In this line, Hendrick & Kleiner (2002) identified diverse applications of this approach. For instance, reduction of work-related injuries, use of Information and Communication Technology (ICT) and their changes in work life, management of large scale organizational changes, improvement of some manufacturing aspects, development of training systems, relocation of technologies, increment of aviation safety and cut of large scale accidents are examples of these applications. Five years later, Hendrick (2007) analyzed the research trends on the management and organization of work systems, which acknowledged technology, demographic shifts, value changes, ergonomic-based litigation, world competition and failure of traditional Microergonomics as principal objects of study. These applications were frequently done in contexts as manufacturing, service organizations, healthcare, maintenance, telecommunications, maritime vessels, and industrial accident prevention. On the other hand and in an isolated way were in retail, military, typesetting, aviation operations, schools, and government.

The structure of this chapter is as follows. It starts by considering the historical contexts of Macroergonomics applications from 1994 to 2013, and the challenges that they posed for Macroergonomics. Next, it examines those works that took place from 2014 to 2018 and attempted to address the raised challenges and the emerged trends in the field. The chapter concludes with a set of predictions and challenges for macroergonomics in the near future.

HISTORICAL CONTEXTS

A search in the Scopus database of the word Macroergonomics in the article title, abstract or keywords, and filtering the period from 1994 to 2013 was done. 150 documents resulted from the search and were classified and summarized in 70 conference papers, 64 articles, four book chapters and two editorials. After, the analysis was conveniently limited to only articles and book chapters so that 68 documents were used in this phase. Table 1 presents the recurrent researchers in the field.

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Table 1. Researchers with most published articles from 1994-2013 in the Macroergonomics field

Author	Frequency	Author	Frequency
Kleiner, B.M.	7	Azadeh, A.	2
Karsh, B.T.	5	Clegg, C.W.	2
Carayon, P.	4	Drury, C.G.	2
Newman, W.P.	4	James, C.G.	2
Robertson, M.M.	4	Nagamachi, M.	2
Sainfort, F.	4	Smith, M.J.	2
Erensal, Y.C.	3	Taveira, A.D.	2
Hendrick. H.W.	3	Village, J.	2
Albayrak, E.	2	Zink, K.J.	2
Alper, S.J.	2		

Source: (Scopus, 2018)

Subsequently, the results were organized using the number of citations obtained during the mentioned period. Therefore, Table 2 summarizes the influential documents serving as a basis to other researchers. Kleiner, Carayon, Hendrick, Robertson, Smith, Alpert, Punnet, Zink and Taveira have been considered the representatives of the Macroergonomics field. It is consequently by the quality and quantity of their publications. They addressed diverse issues as sociotechnical systems, design of work systems, healthcare and occupational ergonomics, manufacturing applications, industrial organization, and public administration.

Particularly, Hendrick & Kleiner (2002) pointed out the increase in the use of communication technologies so that work at home could be recognized as a new way of work. These anticipated and suggested mandatory changes in organizations and specifically, in their structure. They concluded that in the current era there should be developed methodologies, tools and curricula in higher education in order to overcome the challenges implied in the Macroergonomics applications.

EMERGING CONTEXTS

A second search in the Scopus database of the word Macroergonomics in the article title, abstract or keywords, and filtering the period from 2014 to 2018 was done. 48 documents resulted from the search and were classified and summarized in 31 articles, 12 conference papers, two reviews, one book and one book chapter. Similarly, the documents were classified according to the year of publication resulting 8 in 2018, 4 in 2017, 9 in 2016, 11 in 2015 and 16 in 2014. Later, all documents were used to uncover diverse fields that were addressed. The contexts were organized in general reviews; macroergonomics tools and methods; organizational analyzes and corporate strategies; sociotechnical systems approach; applications in home and community-based work and office jobs; hospitals and healthcare; manufacturing, and construction and trucking industry.

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Table 2. Researchers publishing from 1994-2013 with most cited articles to the date in the Macroergonomics field

Author	Cited	Document Title
Pascale Carayon (2006)	169	Human factors of complex sociotechnical systems
Kleiner, Rajani, & Sadiq (2006)	73	Macroergonomics: Analysis and design of work systems
Smith & Carayon (1995)	69	New technology, automation, and work organization: stress problems and improved technology implementation strategies
Punnett, Cherniack, Henning, Morse, & Faghri (2009)	68	A conceptual framework for integrating workplace health promotion and occupational ergonomics programs
Alper & Karsh (2009)	64	A systematic review of safety violations in industry
Hendrick (2008)	60	Applying ergonomics to systems: Some documented "lessons learned"
Robertson, Huang, O'Neill, & Schleifer (2008)	49	Flexible workspace design and ergonomics training: Impacts on the psychosocial work environment, musculoskeletal health, and work effectiveness among knowledge workers
Husemann, Von MacH, Borsotto, Zepf, & Scharnbacher (2009)	46	Comparisons of musculoskeletal complaints and data entry between a sitting and a sit-stand workstation paradigm
Hendrick (1995)	42	Future directions in macroergonomics
Smith, Schoenbeck, & Clayton (2009)	35	Staff perceptions of work quality of a neonatal intensive care unit before and after transition from an open bay to a private room design
Neumann, Ekman, & Winkel (2009)	34	Integrating ergonomics into production system development - The Volvo Powertrain case
Karsh & Brown (2010)	33	Macroergonomics and patient safety: The impact of levels on theory, measurement, analysis and intervention in patient safety research
Brian M. Kleiner (2008)	33	Macroergonomics: Work system analysis and design
Neumann & Village (2012)	30	Ergonomics action research II: A framework for integrating HF into work system design
Zink (2000)	29	Ergonomics in the past and the future: From a german perspective to an international one
Holden, Or, Alper, Joy Rivera, & Karsh (2008)	28	A change management framework for macroergonomics field research
Wood, Stride, Wall, & Clegg (2004)	28	Revisiting the use and effectiveness of modern management practices
Korunka et al. (2007)	26	Customer orientation among employees in public administration: A transnational, longitudinal study
Haro & Kleiner (2008)	25	Macroergonomics as an organizing process for systems safety
Taveira, James, Karsh, & Sainfort (2003)	25	Quality management and the work environment: An empirical investigation in a public sector organization

Source: (Scopus, 2018)

General Reviews

This section contains nine documents addressing general reviews of Macroergonomics. First, Berlin, Neumann, Theberge, & Örtengren (2014) compared how the Canadian Industrial Engineers and Ergonomists work to influence the Human Factors and Ergonomics (HFE) issues. It was also considering the implied constraints and strategies on them. They found that the best strategy to show the benefits by HFE improvements should be presented in terms of business profits. Second, Parallel, Karsh, Waterson, & Holden (2014) addressed the Mesoergonomics issue related to how the micro and macroergonomics should be linked and integrated into each other. In order to do so, they defined Mesoergonomics issue as an open system approach in the HFE theory and research. It results on study the relations between variables in which the HFE constructs are the dependent variables. They also proposed a framework for implementing that issue and illustrated its value within the theory through two case studies.

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Moreover, Patrick Waterson et al. (2014) analyzed the current and future directions of Macroergonomics and the sociotechnical systems. Principally, their discussion was centered on the effectiveness of the Macroergonomics methods by facilitating the improvements on the workplace design. Specifically, some applications of them took the form of health and safe interventions in community settings in which there were chronically ill patients. Within the same type of contexts, Murphy et al. (2014) examined the relation of safety climate and Macroergonomics and how it affected the safety outcomes. Principally, they identified two subsystems (personnel –methods- and technology –processes-) as major factors affecting the achievement of a safety climate. It was seen in the management commitment on safety and communication highlights. Additionally, they proposed a conceptual model as a framework to guide organizational interventions on this matter. In the same line, Nathanael, Zarboutis, and Marmaras (2015) contributed to the intervention process in the Macroergonomics field with a methodology based on the dialectics notion of contradictions. Their proposal had a particular value on practical means by anticipating the effects and side effects of proposed changes during the Macroergonomics applications.

Furthermore, Kleiner, Hettinger, DeJoy, Huang, and Love (2015) proposed theoretical and practical approaches to identify sociotechnical attributes of safe and unsafe work systems. They also presented a variety of socio technical systems perspectives on intersections between social-organizational and technology-work process factors and the impact on analysis, design and operation of the work systems. In detail, Hassall et al. (2015) defined HFE as fields applying scientific information about human cognition and behavior to support the design of products and systems enhancing human well-being and performance. Their contribution consisted on defining the general concepts of HFE that included human-system interaction, HFE professionals, safety, and productivity, among others. Going beyond, Thatcher et al. (2016) link Macroergonomics and Sustainability concepts arguing that HFE professionals, due to their knowledge and skills) can support problem solving as pollution, climate change, renewable energy and land transformation.

Finally, Thatcher, Waterson, Todd, & Moray (2018) evaluated the impact of the Ergonomics discipline in the last 25 years to face up the global problems facing humanity and considered how Ergonomics might help in the future problems of society. Following this course, Marina Bischoff & Vianna Dos Santos (2018) presented a literature review regarding the Human Factors and Ergonomics and relationships with other areas as communication interactions research line, Macroergonomics, internal organization communication, and the process of communication auditing. To finish this section, Figure 1 exhibits the used keywords in the documents found and the number of them.

Macroergonomics Tools and Methods

Seim, Broberg, & Andersen (2014) studied the learning process for HFE professionals (researchers and practitioners) in an interactive research project. They proposed a new framework for intervention in the processes of workplace design in companies. This frame was based on applying the social learning theory. On the other hand, Lim, Village, Salustri, & Neumann (2014) developed and evaluated a method applying a process mapping as a tool for participative integration of human factors into work systems design within an electronic manufacturer. This process included a map creation, a map application and an evaluation of the mapping process. Similarly, the tools included a definition of the scope and level of detail in the mapping, contained errors, missing information, and map overlap.

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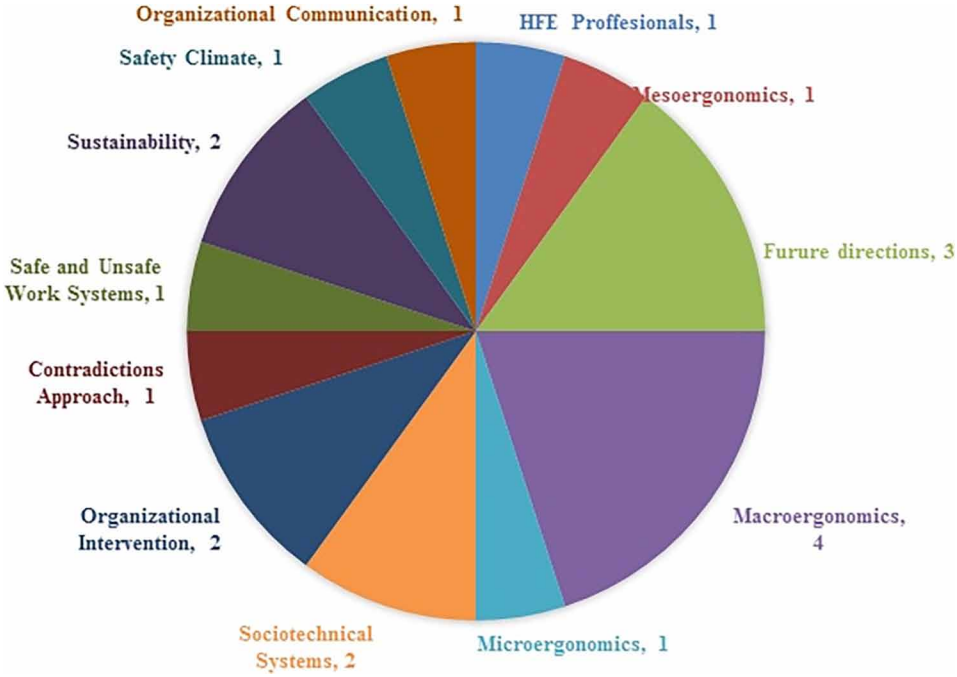
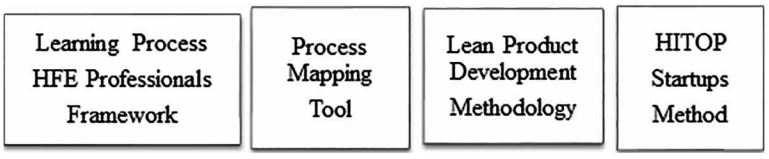
Figure 1. Keywords in general review
Source: The authors



Moreover, Barón Maldonado, Rivera, and Caro (2014) presented the development of a methodology to implement Lean Product Development (LPD) in apparel companies. This methodology incorporated concepts of Integrated Management Systems, Ecodesign and Macroergonomics. Four years after and in the same line, Silva, Nickel, & Dos Santos (2018) provided an evaluation of Macroergonomics methods for the application of organization analyzes in startups. They analyzed eight methods resulting that High Integration of Technology, Organization, and People (HITOP), Analysis and Macroergonomics Analyses of Structure (MAS) methods were only deemed applicable to startups. Also, Macroergonomics Analysis and Macroergonomics Design and Analysis (MEAD) may be applicable only in specific cases of startups. Figure 2 presents the main methods and tools used in Macroergonomics.

Figure 2. Keywords in macroergonomics methods and tools
Source: The authors



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Organizational Analyzes and Corporate Strategies

Kluge (2014) studied as object the acquisition of knowledge and skills for task work and teamwork for controlling technical systems since the macroergonomics perspective. To do so, he proposed a theoretical model, which was focusing on how skill and knowledge acquisition for complex tasks was accomplished. In addition, he showed how this model should be used to derive training methods and instructional techniques. He also included the learning process, knowledge structure and skill requirements as fundamental variables of analysis and how they were associated with the effective operation and management of technology.

Furthermore, Valdez et al. (2014) studied the healthcare sector as a work system and this research was focused on how macroergonomics principles and models originally developed within an institutional context may be adapted for the contexts in which patients were embedded. In the study, they considered patients performing many non-paid activities in order to maintain and improve their health. These kinds of activities may be conceptualized as self-care and self-management work. They also focused in lessons related to the conceptual, methodological and practiced-related challenges on understanding and affecting patients' work and works systems that may be subsequently applied by other researchers on other contexts.

Concerning to team cohesion, Salas, Grossman, Hughes, and Coultas (2015) reviewed the literature finding relevant information about cohesion measurement, exploring developing measurement approaches, and providing theoretical and practical recommendations for optimizing cohesion measurements. They also reviewed empirical research uncovering specific information about cohesion conceptualization, measurement, and relationships with performance. This study ended with the current trends on team cohesion providing suggestions and possible solutions to guide future efforts in this field.

To increase the impact of ergonomics in a Colombian organization, Rodríguez Ruíz & Pérez Mergarejo (2016) proposed a Macroergonomics diagnosis, which performed an assessment on five Colombian organizations using the Ergonomics Maturity Model (EMM). The methods under this model were used to assess the capability of an organization by introducing, developing and implementing ergonomics. The results suggested that organizations could be classified in the lowest ignorance maturity level. Lack of trained personnel in the ergonomics field, reactive approach on solving problems and the limited ergonomics risk assessments were found as the main causes of this result.

In a specific context, Village, Salustri, and Neumann (2016) focused on how cognitive mapping links human factors to corporate strategies. Individual cognitive maps were drawn during one-hour interviews with seven senior directors of a large electronics firm. The objective was to harness individual tacit knowledge from senior directors about human factors relating to strategic goals and making explicit their shared managerial thinking with the aim of identifying improvement opportunities using those factors. They concluded on uncovering the strong connection between human factors and explicit strategic goals. Consequently, this connection can help organizations on identifying opportunities to improve human and business performance.

Additionally, Silva et al. (2018), as mentioned in the last section, used an analysis of macroergonomics methods on startups for study performance. It was discovered that methods employed only should be utilized on specific startups based their organizational objectives. As a result, they presented two types of applications of the methods, as explained above. Figure 3 shows the principal presented works in this section.

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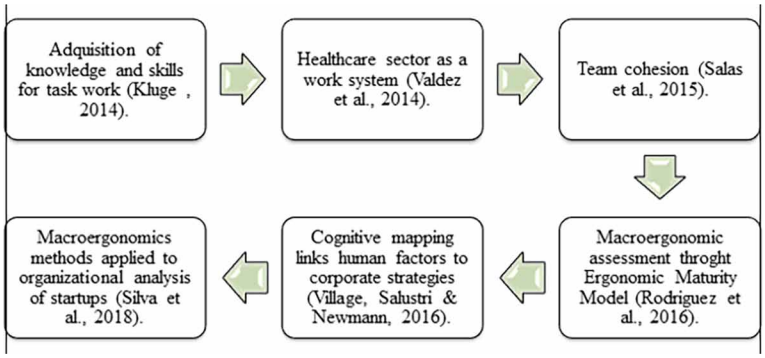
Figure 3. Main works for organizational analyzes and corporate strategies
Source: The authors



Sociotechnical Systems Approach

Waterson et al. (2015) provided an up-to-date review of Socio Technical Systems (STS) methods, tools, techniques and case studies focused on methods for workplace safety. They concluded with a roadmap for future work in the field. In the same line, Meshkati, Tabibzadeh, Farshid, Rahimi, & Alhanaee (2016) proposed a framework to ensure regional interoperability for safety, sustainability, and resilience of interdependent energy, water, and seafood sources in the Persian Gulf. They performed the integration of People-Technology-Ecosystem. This integration was built upon the Rasmussen's model, a macro system integrative framework that was based on the broader context of human factors considering as a meta-ergonomics paradigm. In other words, this was developed in order to use a great number of variables.

Applications in Home and Community Based Work and Office Jobs

Coelho, Tavares, Lima, and Lourenço (2017) analyzed the effect of different kinds of work on the psychosocial assessment of workers under the same management and organizational environment. The Copenhagen psychosocial questionnaire was used in a voluntary assessment in a utility company with the participation of 25 office workers and 32 field workers. The results suggested that variables as organizational design, management in system in place and cultural environment were more relevant in terms of decisive impact that specific factors.

On the other hand, Robertson, Huang, & Lee (2017) focused on a macroergonomics intervention in an office workplace. Two principal factors were considered which could produce beneficial effects for office and computer workers and their organizations. The effect of the intervention was stronger when the workers' ergonomics needs were taken into account by the management showing their responsibility on these issues.

Hospitals and Healthcare

Patel and Kannampallil (2014) examined the theoretical and foundational models of human factors and ergonomics (HFE) for achieving patient safety and quality and for evaluation of healthcare systems in the 2007-2013 period. They also investigated the potential of the approaches in biomedical informatics.

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Similarly, they discussed the opportunities for better integrating HFE in these contexts. In same kinds contexts, Barzideh, Choobineh, & Tabatabaee (2014) studied the job stress dimensions and examined their relationship to musculoskeletal disorders (MSDs) among nurses of Shiraz University of Medical Sciences hospitals. It was a cross-sectional study in which 385 randomly selected nurses participated. There, 89.9% of the participants experienced some form of MSDs during the last 12 months. The major lower back symptoms were the most prevalent problem reported (61.8%). In conclusion, the nurses were exposed to high levels of job stress. Similarly, Carayon et al. (2014) analyzed the Systems Engineering Initiative for Patient Safety (SEIPS) model. Initially, they described several research and practical applications for healthcare systems and process redesign in which the principles for redesign healthcare systems were included. In addition, Clack, Kuster, Giger, Giuliani, & Sax (2014) presented the case of infection risk associated with syringe manipulation that could easily be solved by introducing user-centered design solutions. Here, the organizational complexity made the implementation of such solutions hardly reachable.

Holden, Brown, Scanlon, Rivera, and Karsh (2015) presented the first study to quantitatively assess the short- and long-term impact of bar coded medication administration (BCMA) information technology on nurses' mental workload as well as on perceived medication safety. Findings raised questions about the achievement of sustainable performance improvement with health information technology and the balance between micro- and macroergonomics approaches for studying technology change. In a parallel way, the industry can learn of this case in the healthcare sector. It is because designers should consider how technology changes the cognitive work including mental work. Similarly and in the same year, Holden, Eriksson, Andreasson, Williamsson, & Dellve (2015) studied healthcare workers' perceptions of lean, a sensitive context, through mixed methods in three Swedish hospitals. They formally discussed strategies for implementing lean in healthcare and the importance of attending the levels, context and worker consequences on those perceptions. Furthermore, they presented some lines of future work on this topic.

McLaughlin, Ward, and Keene (2016) described a new surgical checklist for veterinary cardiologist based on the literature and application of human factors design. Bolis and Sznelwar (2016) also analyzed a case study of the implementation of an ergonomics improvement committee in a Brazilian hospital. This was considering the challenges and benefits. Moreover, Yang and Asan (2016) performed a literature review on how the designs of patient-facing Health Information Technologies (HITs) have been suggested and evaluated, and how they may potentially affect the doctor-patient communication and patient-centered care.

In same line, Holden, Valdez, Schubert, Thompson, and Hundt (2017) analyzed the macroergonomics factors in the patient work system with chronic illness and their informal caregivers. They identified 17 factors across physical, social and organizational domains and household and community levels. Health related activities of patients are embedded in and shaped by levels of the social, physical and organizational context. Finally, Steege, Pasupathy, & Drake (2018) analyzed the fatigue of hospital nurses. Similarly, they explored the relationships between nursing work system components and fatigue and recovery of nurses.

Manufacturing

Heras-Saizarbitoria, Cilleruelo, & Allur (2014) analyzed, from the macroergonomics perspective in the traditional industrial and service subsectors, the influence of the main global management meta-standard. This study was carried out in two Spanish organizations belonging to the subsector of residential care

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home for elderly persons and was focused on the quality of working life of the direct attention employees. In a parallel way, Sherehiy & Karwowski (2014) analyzed the relationship between work organization and workforce agility in small manufacturing enterprises. A total of 41 managers, 82 office workers, and 52 production workers from six small manufacturing companies participated in the study. The results should be used for optimizing work demands and conditions in the workplace environments in which it is required constant change and adaptation.

Furthermore, de Guimarães, Anzanello, Ribeiro, & Saurin (2015) presented a participatory intervention in a furniture manufacturing company in Southern Brazil. The study indicated that it was possible to balance both ergonomics and production demands. As a result, workload was reduced by 42% and productivity increased by 46%. On the other hand, Realyvásquez, Maldonado-Macías, García-Alcaraz, & Blanco-Fernández (2015) examined the effects of organizational macroergonomics compatibility elements over manufacturing systems performance from four companies in Mexico. Results indicated that macroergonomics organizational elements as organizational culture and organizational communication had different effect over clients and indirect effect over the manufacturing processes and growth of companies. Similarly, Cifuentes & Fulmer (2015) studied the use of treadmill workstations and psychosocial barriers to using them. They found that barriers were related to communication, need for motivation, peer pressure, and adaptation affecting performance. However, effectiveness and efficiency studies demonstrating improved energy expenditure in real workplaces have yet to build evidence to support use of such workstations.

Moreover, Realyvásquez, Maldonado-Macías, García-Alcaraz, Cortés-Robles, & Blanco-Fernández (2016) proposed a macroergonomics compatibility questionnaire that was statistically validated and 158 respondents at four manufacturing companies participated. They analyzed the effects of environmental elements on the psychological characteristics and performance of employees in manufacturing systems using the structural equation modeling. In this sense, Pacholski & Pawlewski (2017) used simulation technology for macroergonomics industrial systems improvement. They analyzed the buses' production process capability after the assembly hall expansion. This project also included the reengineering of the macroergonomics industrial system model for the new work organization, visualization and verification.

On a similar note, Miguez, Filho, Faustino, & Gonçalves (2018) developed a project in a 1,500-employee metallurgical factory, where a multidisciplinary team of certified ergonomist, engineers, managers and direct employees used concepts of Participatory Ergonomics and Lean Manufacturing. As a result, unnecessary activities were eliminated reducing the costs and lead-time and maintained the well being of workers. Finally, Realyvásquez, Maldonado-Macías, García-Alcaraz, & Arana (2018) proposed a Macroergonomics Compatibility Index (MCI) for manufacturing systems in Mexico. Here, the variables used to measure that index were Person, Organization, Technology and Tools, Task, and Environment as Macroergonomics factors.

Construction and Trucking Industry

Tavares et al. (2015) promoted the debate about work at heights in the construction industry. This type of work had been responsible for occupational accidents. In fact, it should be highlighted as a real problem because there is the lack of application of the occupational health and the safety ergonomic approach. In the same field, Zhao, McCoy, Kleiner, Smith-Jackson, & Liu (2016) analyzed fatal electrical injuries in the construction industry. This work contributed to the knowledge body of risk management, electrical safety and research methodologies. It was because the study used a triangulation approach for examin-

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ing construction-fatality reports and considering effective risk management through the control over the whole sociotechnical system.

Murphy, Robertson, Huang, Jeffries, & Dainoff (2018) and Murphy, Huang, Robertson, Jeffries, & Dainoff (2018) applied the sociotechnical systems approach to enhance safety climate in the trucking industry. To do that, they developed a methodology to describe the results of the study. This methodology extended safety climate beyond an overall score by using the framework of Macroergonomics by examining the entire system in a more comprehensive manner. Also, it was applied to identify gaps in the specific work system and that information can be used to design interventions to change the safety climate and culture of an organization for reduce negative safety outcomes. Similarly, it included the critical incident technique, contextual inquiries, functional role diagrams, and affinity mapping. Key informants in the trucking industry helped on identifying 19 themes that affected safety. The themes ranged from balancing work and family/personal time, the company's policy vs. practice, respecting the job of the driver, and active listening and meaningful feedback.

FUTURE RESEARCH DIRECTIONS

According to the initial analysis carried out for the period from 1994 to 2014, there was evidence that studies had a greater impact in the actual research. This was based on the number of citations found in the search done in the Scopus database. These citations were related to the analysis of the work systems using the Sociotechnical Systems approach as principal view on the studies in which consequently there were diverse lessons learned. Principally, programs promoting the health and occupational safety, and ergonomic interventions in production systems and public administration were examples of its applications. On the other hand, the second study focused in the period from 2014 to 2018 uncovered different and interesting applications of the Macroergonomics approach.

For instance, the number of studies were proportionally increased in relation to the number of years used in this search. The search also put on manifest the varied interest of researchers on study the approach in other uncommon contexts. They were interested in knowing what is happening in hospitals, health care, manufacturing among other contexts. Moreover, they were done ergonomic interventions in organizations using various techniques and methods in order to prove their feasible on those contexts. Finally and using the information presented, it is concluded that applications of Macroergonomics would be found in diverse contexts using new techniques and methods in order to deal with the actual situations in which systems are immersed.

For instance, it is expected that researchers from diverse countries and continents would use the Macroergonomics approach to investigate topics related to the implementation of manufacturing philosophies, performance indexes, organizational policies and strategies, among others. Similarly, it is predicted the incorporation of theories, techniques, and methods employed in other Ergonomics approaches. Furthermore, the researchers will open those in other contexts in order to fill the gaps of knowledge discovered. In this line, it could be seen with the inclusion of rural contexts on research. In fact, contexts in primary sector is an opportunity of research using the Macroergomics approach, as emerging discipline.

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CONCLUSION

It is considered that the future of Ergonomics is seen in the health sector and hospitals and manufacturing; however, it is important to highlight the necessity to focus on other aspects of them. For instance, biomechanics, anthropometry and physical chronic and occupational diseases are relevant topics of Ergonomics. These indirectly expanded the opportunity to investigate the mental health associated with the labor relations, teamwork, burnout, among other factors studied into the psychosocial factors provoking stress. As a result of the work, stress is considered a relevant factor, which should be studied to consequently reduce it. It is known that multiple causes obey to multiple variables attributable to organizational factors as structure and culture. This is because psychosocial factors represent a key element to maintain a good performance in each of the hierarchical levels of a company (and therefore at the organizational level).

In contrast, Macroergonomics is currently opening opportunities to research on other labor sectors. For example, a great number of research and applications are being carried out at the macro-ergonomic level in the agricultural sector, the education sector, and aviation, additionally to manufacturing and hospital contexts. Moreover, there is a tendency to carry out research on the mental burden and burnout of workers in the manufacturing industry. This opens the way for replicate the research in different labor sectors, as mentioned before. Furthermore, research is being carried out in the area of work psychology from a macro-ergonomic approach in workers with disabilities. This is in order to determine the behavior of those towards the demands, structure and culture of organizations and co-workers. In all these investigations, although the development and validation of a tool or a macroergonomic evaluation technique is not guaranteed, they could develop models or methodologies that could be applied in future and similar studies but in different contexts ensuring success in any macro-ergonomic research and applications by adopting the sociotechnical systems approach.

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KEY TERMS AND DEFINITIONS

Ergonomics: Science that studies the best adaptation of the work system to the human.

Human Factors: The human factors (or ergonomics) is the study of how individuals react to certain environments, products, or services in physical and psychological terms.

Macroergonomics: Macroergonomics aims to design a fully "harmonized" work system enhancing the key performance indicators for organizational effectiveness, productivity and satisfaction; where the sociotechnical systems theory is the fundamental principle, including industrial and organizational psychology approaches.

Microergonomics: The Microergonomics approach study the interaction between machine, environment, software, and job with the human.

Organizational Performance: Measure of efficiency and effectiveness, with which administrators take advantage of resources to satisfy customers and achieve the goals of the organization.

Productivity: Production capacity per work unit.

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Sociotechnical Systems Approach: It is the approach that recognizes the interaction between individuals and technology in workplaces so that it helps on the complex organizational work design.

Work Systems: It is a natural unit of analysis for thinking about systems in organizations. In organizational settings, work is the application of human, informational, physical, and other resources to produce products/services.

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Index

A

Absenteeism 37, 125-126, 183, 243, 254, 270-271, 274, 329, 331, 352, 358, 474, 477, 480, 496, 499-500, 519, 521, 568, 570, 581, 644, 664, 683, 688, 692, 697, 711-712, 729, 769, 821, 831, 864, 869, 871-872, 881, 918, 928, 931, 947, 1090, 1142, 1146, 1150, 1155, 1160, 1171, 1196-1204, 1206-1207, 1240, 1254, 1325, 1336, 1369-1370, 1377, 1386, 1403-1404, 1436, 1480, 1647, 1690, 1732, 1794, 1805, 1807, 2021, 2070
academic faculty wellness 2004
Academic Medicine Centres 2017
Academicians 120, 877-878, 882-891, 893, 895-896, 1319, 1927
accident analysis 1365, 1477-1478, 1484, 1500, 1506
Active Ageing 644, 661, 1744, 1748, 1751-1752, 1754, 1762, 1764, 1767-1768
active inclusion 745, 750
Adult Learning 303, 305, 309-314, 316, 318-322, 1870-1871
Affinity Group 825, 831, 1872, 1876
Age Management at Workplace 1768
Age Range 337, 591, 1181, 1328, 1339, 1353-1354, 1360, 1395, 1400, 1747, 1813
Ageism 282, 1283, 1303, 1746-1749, 1765, 1780, 1852, 1857, 1871
Agricultural Injury 1525, 1602
AHP 70, 555, 620-624, 640, 642
Albert Bandura 203
Allowance 242, 247, 249, 476, 478, 480, 494, 498, 587, 590-592, 594-595, 1145, 1148, 1551, 1858, 1937-1938, 1941
Ally 825, 836-837, 1291
American Psychological Association 203-204, 218, 220-221, 408, 941, 1337-1338, 1708, 1716, 1726, 1728, 2021, 2023, 2035
Analysis 12, 18-20, 33, 36-37, 39, 52, 54, 65, 68-69, 71, 75, 81, 122, 128-129, 144, 147, 153, 157, 160, 175-176, 178-179, 181, 186, 212, 216, 219, 223, 225-226, 236, 250, 252, 255, 257-258, 260, 262-267, 269, 272-273, 293, 298, 307, 313, 337, 340-341, 345-346, 350, 357, 362, 365, 374-376, 385, 387, 393, 405-407, 409-410, 422, 429-431, 441, 447, 451, 461, 469-470, 475, 482, 485, 488, 490, 493, 498, 506-514, 516, 522, 524-525, 528, 537, 545, 547-551, 553-556, 559, 561, 565, 567-575, 582, 584, 589, 592, 600, 602-603, 605, 613-614, 616, 620-621, 623, 636, 639-642, 645, 657, 662, 666, 668, 672-673, 677, 681-682, 697-698, 709, 719, 724-726, 729-730, 732, 736, 745-746, 755, 757, 763, 768, 777, 788-789, 811, 815-816, 820, 822, 856, 859, 866-867, 871, 873, 887-889, 891, 894, 904, 906, 909, 921, 926, 934-935, 938, 943, 951, 960-961, 963, 965-966, 969-970, 972, 978-979, 990-994, 996, 1004-1008, 1010-1016, 1018-1019, 1021, 1027, 1038-1039, 1046-1047, 1051, 1055-1062, 1065, 1067, 1072-1073, 1076, 1079-1081, 1083, 1085, 1092-1095, 1101, 1105, 1113, 1116, 1119, 1124, 1126, 1128, 1131-1132, 1135, 1137-1138, 1140, 1145-1146, 1148-1149, 1152-1153, 1157-1158, 1168, 1173, 1175, 1181, 1183-1190, 1193, 1200, 1205, 1208, 1210, 1218, 1227, 1234-1235, 1244, 1252, 1261, 1263, 1265, 1273, 1302, 1319, 1322, 1327, 1329, 1336-1338, 1340, 1349, 1351, 1360, 1362, 1365, 1368-1369, 1375-1378, 1381, 1400-1404, 1406, 1408-1409, 1411, 1418, 1421, 1426, 1430, 1432-1435, 1438, 1441-1442, 1445, 1449-1450, 1452, 1454, 1457-1459, 1465, 1467-1468, 1470-1471, 1475, 1477-1480, 1483-1486, 1488, 1490-1492, 1494-1506, 1508, 1512, 1522, 1524-1526, 1531-1536, 1540-1541, 1543, 1547, 1551, 1555-1556, 1564-1565, 1567, 1569, 1572-1573, 1577, 1586, 1588, 1594, 1596-1597, 1599-1602, 1609, 1612, 1614, 1630, 1637-1638, 1642-1644, 1658-1659, 1671, 1677-1678, 1683, 1686, 1688-1689, 1692, 1712, 1763, 1767, 1774, 1776, 1780-1781, 1788, 1804-1806,

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1808-1809, 1812, 1828, 1835, 1841, 1848-1849, 1860, 1907, 1914-1915, 1917, 1925, 1927-1929, 1939, 1945-1952, 1958, 1960, 1967-1968, 1972, 1974-1975, 1980, 1987-1989, 2015, 2029, 2033, 2035-2037, 2050, 2054, 2074, 2086-2087, 2091, 2104-2107, 2111-2112, 2115-2117, 2121-2122, 2124-2127, 2129
Anesthesiology 752, 763-765, 1690, 2016
ANN 642, 1657, 1932, 2028
Anthropometry 600, 603, 607, 614-615, 617, 619, 2122
Anxiety 4, 8, 24, 32-34, 44, 84, 166, 168, 170-171, 173, 175, 181, 256-258, 272, 324, 327, 332-333, 338-343, 356, 367-368, 370-371, 373-381, 383-384, 443, 448, 464, 517-519, 522, 524, 527, 542, 709, 711, 713, 736, 754, 835, 878, 913, 929-930, 952, 955, 1161-1164, 1169, 1171-1173, 1209, 1214, 1231, 1239, 1277, 1284, 1291, 1325, 1327, 1343, 1362, 1369, 1375, 1378, 1386, 1398, 1416, 1436, 1450, 1459, 1646, 1651, 1657-1658, 1660, 1716, 1722, 1776, 1794, 2005-2007, 2009-2010, 2012, 2044, 2070, 2072, 2078
Appreciation 40, 105, 121, 267, 305, 329, 350, 481, 483, 500-501, 535, 704, 768, 847, 1000, 1150, 1183-1184, 1187, 1190-1191, 1195, 1737, 1740, 1800, 1854-1855, 1895-1896, 2087, 2104
Appreciative Inquiry 145, 681-684, 690, 697-705, 1731-1732, 1735-1743
Artificial Intelligence 1-4, 7, 11, 17, 21, 83, 193, 352, 355, 721-723, 737, 758, 1364-1365, 1631-1633, 1814, 2071
Assessment 23, 46-48, 53, 56, 61, 66-72, 77, 80-84, 106, 140, 174, 195, 210, 212, 218, 222, 247, 253, 270, 274, 312, 314, 318, 326, 342, 353, 355, 365, 387, 391, 400, 422, 425, 490, 492, 494, 514-515, 543, 545, 547-549, 552, 556-565, 567, 569, 576, 579, 581-584, 596, 601-603, 608, 615-617, 621, 641, 646, 666, 689, 726, 733, 737, 852-853, 871, 878-879, 891, 894, 896-897, 912, 916, 937, 941, 960-961, 963, 965-967, 969-970, 972, 974, 981-984, 986, 991-995, 1001, 1003-1004, 1013, 1022, 1025, 1029, 1032-1033, 1084, 1158, 1200, 1227, 1272-1273, 1286, 1300, 1339-1340, 1343, 1345, 1361, 1363-1364, 1370, 1378, 1380-1381, 1384-1386, 1401, 1414, 1424, 1426, 1430, 1474, 1477, 1479, 1485, 1489, 1496, 1499, 1503-1504, 1508, 1512, 1515, 1521-1525, 1541, 1546, 1550, 1552, 1572-1575, 1584, 1598-1601, 1610, 1618-1619, 1650, 1652, 1655, 1676-1677, 1682, 1684, 1686, 1688, 1691, 1702, 1736, 1751, 1801, 1805, 1809, 1923, 1929, 1944, 1975, 2006, 2039, 2065-2067, 2087, 2117-2118
associate experience 707, 715-716, 731
Attributional Tokenism 91, 97
Automation Tax 1626
Axiomatic Design 600, 604, 607, 614-616, 618

B

B Corporation 201
Banking Sector 130, 893, 1157, 1318, 1457-1458, 1769, 1776, 1948
beauty is beastly 1906, 1915-1916, 1920
Best Practices 112, 432, 614, 683, 690-692, 812, 1002, 1218, 1646, 1652, 1731-1732, 1735, 1740, 1828, 1852, 1868, 1873-1875, 1977, 2023, 2105
Bias 45, 102, 124, 162, 269, 286-287, 290, 296, 301, 392, 399-401, 404-405, 407-408, 411-412, 422, 426, 640, 666, 717, 755-756, 761, 766, 807, 818, 822, 828, 839, 844, 852, 1239-1240, 1244, 1249-1250, 1253, 1280, 1551, 1639, 1643, 1660, 1672, 1724, 1780, 1819, 1821, 1823, 1826-1827, 1830, 1832, 1885, 1890-1891, 1900, 1902, 1904-1905, 1907, 1913-1915, 1921, 1946, 2060
Biological Hazards 968, 1525
Bisexual 347, 853, 1276, 1281, 1283, 1285-1286, 1290, 1295-1303, 1899
Board Of Directors 116, 119, 1945, 1947-1948, 1950-1952, 1955, 1957-1958
Body Dimensions 610, 618
Body Mass Index 439, 441, 443, 470, 582, 692, 696, 1213, 1435, 1437, 1441, 1601
Bona Fide Occupational Qualifications 1920
Bruner 303, 305-306, 314-315, 318-319, 1905-1906, 1914
buffering effect 252-253, 255-256, 260, 265-268
burning out 1410-1412, 1415, 1431
Burnout 34, 53-65, 141, 143-148, 160, 178, 214, 218, 273, 332, 340-341, 351-352, 354, 369-372, 379-382, 384, 386-388, 439-441, 443, 445-446, 448-449, 452-453, 460, 462-463, 465-470, 513, 517-520, 530-531, 534-535, 537, 539, 541-542, 685, 687, 689, 698-700, 702, 709, 711-713, 730, 732-735, 737-739, 754, 757, 759-765, 858-860, 862-904, 907-918, 920-929, 931, 933-941, 944, 947, 953-955, 958, 1161-1174, 1211, 1219, 1240-1241, 1251, 1334, 1363-1364, 1389, 1392-1393, 1396-1416, 1420-1436, 1438, 1441, 1444-1445, 1450-1452, 1455, 1473, 1540-1541, 1545-1546, 1701, 1712, 1716, 1721, 1728, 1758, 1766-1767, 1784-1787, 1789-1809, 2004-2013, 2015-2017, 2122
Business Administration 185-186, 191, 196, 1102,

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1688, 1967, 1970
Business Case For Diversity 115-116, 130, 290, 301, 818, 1139, 1678, 1878, 1902, 1961
Business Model 20, 194, 226, 229-230, 234-237, 241, 394, 778, 1698, 1811
Business Opportunity 232, 275-276, 280-283, 288-291, 810, 1876
Business Performance 95, 116, 120, 130, 143, 349, 361, 622, 819, 881, 998-999, 1100, 1104-1106, 1110, 1139, 1208, 1659, 1679, 1753, 1830, 1900, 1917, 1945, 1947-1948, 1950-1952, 1961, 2076, 2117
Business Strategy 33, 96, 109, 114, 119, 125, 147, 304, 307, 805, 1659, 1681, 1694, 1704, 1753
BWM 1508

C

Career Advancement 764, 796-798, 806-807, 816, 824, 833, 1052, 1054, 1057, 1666, 1671, 1685, 1772, 1782, 1872, 1975, 1986
Career Change 369, 824
Career Development 144, 165, 281, 292, 294, 309, 315, 320, 341, 384, 684, 700, 703, 716, 757, 761, 797-800, 802, 805-806, 810-814, 818, 820, 837, 891, 954, 956, 1060, 1234, 1236, 1316, 1318, 1541, 1663, 1665-1669, 1671-1672, 1674-1676, 1678-1680, 1685-1692, 1733, 1754, 1763, 1766, 1771-1772, 1781, 1803, 1807, 1815, 1855, 1866, 1871, 1873-1875, 1880-1882, 1899, 1904-1906, 1916, 1918, 2083
Career Development Evaluation 798, 805, 1665-1666, 1671-1672, 1674, 1692
career transition 1866, 1873, 1875, 1878, 1883
career transitional challenges 1872-1873, 1883
Caregivers 178, 755, 1285, 1287, 1295-1299, 1301-1302, 1392-1393, 1395-1396, 1398, 1400, 1403-1404, 1406, 1628, 2119
Change Process 2, 720, 1055, 1665, 1731, 1735-1736, 1738
Changes in Composition 98
Chemical Hazards 968, 1511, 1525
Chemical Industry 492, 966, 969, 1157, 1477-1478, 1486, 1503-1504, 1506
civil status 1339, 1341, 1343, 1353-1355, 1360
Climate Change 1216, 1218, 1693-1694, 2055-2067, 2115
Climate Policy 2055
code-switch 825, 830
Coercive Power 1729
Cognitive Ergonomics 80, 83, 564, 1340, 1361, 1363, 1365
Collaborative Economy 229-230, 241, 1946
Commercialization 353, 363, 1252, 1965-1966, 1970, 1973-1974
Communication Channels 349, 360, 796, 804, 808, 812, 1001
comparative approach 1021
Competitive Advantage 37, 98, 103, 114-115, 121-122, 126, 135, 159, 163, 203-204, 208, 211, 215-217, 219, 232, 242, 275-276, 280-281, 284, 289, 291, 294, 300, 304, 380, 395-398, 405-408, 413, 416, 665, 769-770, 796-800, 803, 807-809, 814, 818, 821, 824, 881, 1003, 1027, 1099, 1113, 1646, 1650, 1654, 1674, 1678, 1690, 1732, 1736, 1746, 1749, 1753, 1786, 1796-1797, 1848, 1857, 1866, 1913
Competitiveness 115, 121, 126-127, 133, 367, 380, 416, 682, 767-772, 778, 780, 792-795, 803, 1003, 1013-1014, 1106, 1110-1111, 1121, 1139, 1209, 1368, 1376, 1640, 1647, 1656, 1669, 1685, 1745, 1750, 1761, 1790, 1910, 1976, 2005, 2109
Conceptual Model 114, 136, 145, 240, 299, 315, 408, 936, 1081, 1225, 1231, 1244, 1249, 1335, 1678, 1708, 1744-1745, 1750, 1762, 2115
Connection Power 1717, 1729
Construction Industry 432, 603, 622, 996-999, 1001, 1003-1005, 1007-1009, 1011-1015, 1017, 1019, 1457, 1475, 2120, 2128
construction site workers 620, 623-624, 636, 639-640
Cooperrider 682-683, 685-686, 699, 1731, 1736-1737, 1740, 1743
Coping Mechanisms 759-760, 765, 909, 936, 1455, 1458, 1473, 2056
Corporate Commitment 1212, 1608, 1621
Corporate Performance 413, 1019, 1102, 1109, 1624, 1708, 1945, 1961
Corporate Social Responsibility (CSR) 390-392, 412, 1613, 1694
Corrective Measures 660, 692, 1496, 1701, 2041, 2049
Counselling 16, 25, 173, 183, 496-497, 759, 815, 938, 1271, 1474, 1661, 1872-1873, 1880, 2007-2008, 2012, 2077
Critical Care 537, 541, 752-753, 755, 759, 764, 921, 1207, 1364-1365
Cronbach alpha index 415, 447
Cuckoo Search 1577-1581, 1594, 1597, 1599-1602
cultural capital 1640-1641, 1661, 1889
Cultural Competency 827, 832, 840-841, 845-846, 849, 851-857, 1224, 1918
Cultural Dimensions 776, 1839-1840, 1845, 1848
Cultural Diversity 87, 94, 96, 113, 121-122, 133, 309, 767-770, 772, 774-775, 779, 781-782, 784-788, 794, 817, 838, 840-841, 855, 1099, 1103-1110,

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1114-1116, 1139, 1637-1638, 1641-1643, 1647, 1650-1651, 1654, 1656-1657, 1661, 1681, 1684-1686, 1832, 1834-1835, 1848-1850, 1916, 1919, 1976
Cultural Intelligence 294, 309, 318-321, 323, 811, 825, 830, 839, 858-861, 864-875, 1643, 1657, 1670, 1679, 1692, 1881, 1899, 1916
Cultural Norms 91, 97, 401, 830-831, 849, 861, 1284, 1323, 1662, 1715, 1721, 1729, 1834, 1889, 1982
Cyberbullying 164-170, 172-181, 183-184, 2019-2021, 2034, 2036, 2038-2040
Cyberstalking 166, 180-181, 183

D

Dangerous Substances 961, 963, 966, 969-970, 974, 982, 990, 994, 1478, 1480
Daniel Goleman 345, 348, 350, 353
data collection instrument 415
decision support system 643, 645, 648, 654
Demographic Changes 10, 23, 98, 100, 113, 121, 644, 840, 1744-1746, 1751
Demographic Variables 129, 131, 213, 215, 371, 374, 378, 877, 884, 888, 890, 902, 911, 1180, 1243-1245, 1416, 1468, 1924-1925, 1930
Depersonalization 442-443, 451, 712, 759, 765, 858, 862-863, 866-868, 875, 880, 882-884, 891, 898, 900-903, 913-914, 916-917, 920, 929, 1163, 1396-1398, 1404, 1411-1416, 1420, 1422, 1792, 1794, 1797
Depression 8, 24, 32-33, 35, 55-56, 58, 60, 64-65, 168, 173, 211, 250, 252-254, 256-258, 264, 266, 268, 270, 272-274, 324, 327, 331-332, 339, 342-344, 368, 371, 383-384, 442, 517-519, 522, 532, 542, 709, 711-713, 730, 733, 736, 738, 754, 759, 764, 835, 864, 883, 917, 922, 928-930, 955, 1164, 1167-1168, 1172, 1197, 1213, 1239, 1241, 1277, 1284, 1325, 1343, 1358, 1360, 1368, 1375-1378, 1386, 1390, 1401, 1404, 1413, 1416, 1432, 1436, 1450, 1523, 1540, 1543, 1545, 1645, 1700-1701, 1716, 1723, 1728, 1776, 1791, 1932, 2006-2011, 2016, 2022, 2044, 2051, 2070, 2072, 2078
Descriptive Representation 842, 1467
Design Parameters 34, 600, 604, 614
Design Thinking 716, 1825, 1884-1885, 1892-1895, 1899, 1902-1903
Deskilling 1, 9, 11-12, 16, 18-19, 21, 1235
Difficult Patients 2017
digital enterprise 707-712, 715, 719-720, 731-732, 739
Discovery learning 303, 305-306, 308, 315, 319, 323
Discrimination 32, 90, 98, 100-103, 110, 121-122, 125-126, 278-279, 281-284, 286-288, 290, 293, 295, 298-299, 301-302, 304-305, 323, 391, 401, 407, 410-411, 518, 769, 808, 819, 829, 834-837, 843-844, 1043-1051, 1055-1059, 1061, 1063, 1100, 1120-1122, 1228-1229, 1231, 1234, 1255-1259, 1261-1262, 1264-1265, 1267, 1269-1273, 1276-1283, 1285-1289, 1291, 1294-1295, 1297, 1299, 1302, 1304-1310, 1312, 1314-1323, 1376, 1457, 1475, 1645, 1647, 1654, 1664-1665, 1675, 1677, 1723, 1744, 1746-1749, 1751-1752, 1755-1756, 1758-1760, 1764-1765, 1773, 1775, 1782, 1823, 1825, 1829, 1832, 1855, 1857, 1867, 1871, 1879, 1889, 1904-1905, 1907, 1909-1912, 1914-1916, 1918-1919, 1921, 1931-1932, 1934, 1938, 1942, 1973, 1980, 1982-1984, 1986, 1989-1994, 1996-1998, 2000, 2021, 2025-2028, 2031, 2033, 2036, 2040
Diseases 9, 25, 244, 332, 422, 440-444, 466, 517, 523-525, 527, 557, 568, 570, 585, 635, 647, 664, 739-740, 743, 753, 913, 925, 942, 944, 949, 952-953, 1025-1026, 1031, 1034, 1197-1198, 1209, 1214, 1285, 1340, 1365, 1368, 1377, 1395, 1401, 1404, 1414, 1418, 1421, 1424, 1436-1437, 1450, 1476, 1478, 1480, 1483, 1507, 1509-1511, 1520, 1522, 1527, 1529-1530, 1540, 1543, 1550, 1570, 1572, 1579, 1609-1611, 1619-1621, 1623, 1757, 1933, 1937, 2044, 2050, 2052, 2057, 2060, 2062, 2065, 2071, 2077-2078, 2122
Disengagement 146-147, 380, 890, 927, 1786-1787, 1791, 1794-1795, 1804-1805, 1830
Disorders 8, 16, 54-55, 74, 168, 210, 243-245, 249, 254, 269, 272, 371, 416, 419, 432, 440-441, 443-444, 448, 464, 467, 517-518, 533, 567-570, 581-585, 597, 600-601, 615, 620, 622, 641-644, 736, 759, 764, 955-956, 1171-1172, 1179, 1278, 1285-1286, 1324-1325, 1368-1369, 1375, 1377-1378, 1385-1388, 1401, 1404, 1413-1414, 1417-1418, 1420, 1428, 1435-1436, 1507-1509, 1512, 1521, 1523-1524, 1550, 1573-1574, 1577, 1581-1585, 1596-1602, 1756, 1877, 1881, 2060, 2119, 2123
displeasure 327, 344, 365
Divergence 115, 138, 719, 748, 1027, 1042
diversity improvement 796-797, 800-801, 804, 809
Diversity Intelligence 275, 278, 291, 294, 301, 303-304, 307, 316, 320, 323, 796, 798, 800, 811-812, 1664-1665, 1678-1680, 1692, 1881, 1894, 1899-1900, 1916
Diversity Management 114-115, 117-121, 123, 126-127, 129-136, 275-301, 347, 769, 796, 810-811, 814, 819, 829, 838, 844-845, 852, 855, 859, 1089, 1100-1102, 1125, 1139-1140, 1650, 1675, 1678,

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1688, 1690, 1852, 1855-1856, 1867, 1875-1877, 1882-1883, 1904, 1910-1911, 1913, 1916-1918, 1920
Diversity Of Thought 800, 824, 1664, 1670, 1692
Diversity Social Climate 302
Diversity Training 118, 284, 320, 798, 804-805, 812, 816, 828-829, 835-837, 1099, 1641, 1663-1664, 1670, 1672, 1674-1675, 1679, 1881, 1904, 1909-1910, 1913-1918, 1921
Dominant Culture 829-831, 1645, 1653, 1726
Doxing 170, 183

E

economic exclusion 1067, 1079, 1085
economic inclusion 1066, 1080, 1085
Edmondson 949, 955, 1811, 1813, 1818, 1822, 1825, 1829-1831
Educational Institution 681, 697, 1348
e-government 2086-2090, 2092, 2105-2110
Elder abuse 1392, 1407
Elderly 51, 103, 248, 754, 1066, 1283, 1296, 1325, 1392-1396, 1398, 1401, 1404-1405, 1746, 1751-1752, 1760, 1853, 1858, 1936, 2057, 2062, 2120
Electromyography 569, 573, 581-583, 615, 1523, 1583, 1598, 1601
Emergency Medicine 752-753, 921, 1167, 1251, 1429, 1433-1434, 2005, 2009, 2016, 2051, 2084
emotion management 1237-1243, 1245, 1247-1252, 1254
Emotional Culture 345-346, 350-361, 364, 366, 1846
Emotional Distress 370, 826, 2019, 2022-2023, 2038, 2040
Emotional Exhaustion 213, 332, 441-443, 445, 448, 451, 455, 458-459, 461, 463-464, 466, 470, 518-519, 712, 726, 759, 765, 862, 868, 880-884, 886-887, 897-898, 900, 902, 913-914, 916-917, 920, 926, 929-930, 934, 937, 1163-1164, 1174, 1238-1241, 1252, 1326-1327, 1334, 1375, 1396-1397, 1399, 1402-1404, 1409-1416, 1420-1422, 1437, 1441, 1455-1457, 1474, 1712, 1792, 1794, 1797, 1803, 2004-2005, 2010, 2012, 2016
Emotional Health 518, 690, 1229, 1231, 1236, 1525, 1715-1716, 1722-1723, 1725-1726, 2007
Emotional Intelligence 7, 13, 105, 214, 292, 319, 323, 339, 345-346, 348-353, 355-358, 360-362, 364-366, 380, 386, 516, 520-526, 528, 531-542, 700, 771, 816, 820, 830, 832, 860, 875, 1101, 1252, 1458-1459, 1469, 1474-1475, 1670, 1680-1681, 1684, 1686-1687, 1689, 1692, 1827
Emotional Wellness 356, 1216, 1715-1720, 1724-1726
Empirical Evidence 37, 44, 114, 121, 126, 131, 305, 309, 340, 538, 622, 717, 728, 1781, 1854, 1948, 2064
Employee Engagement 126, 137-149, 159, 162, 355, 358, 362, 387-388, 397-398, 412, 476, 497, 710, 712, 926, 937-938, 941, 1144, 1530, 1542-1543, 1731-1735, 1737-1742, 1749, 1758, 1765, 1796-1798, 1800, 1805, 1807, 1809, 1830-1831, 1874, 2037
Employee Productivity 7, 393, 396, 495, 512, 515, 682, 797, 1176, 1704
Employee Relations 32, 159, 361, 396, 475-476, 494, 829, 856, 1159, 1334, 1753, 1764, 1875, 1913, 1924, 1938
employee resource group 825
Employee Satisfaction 145-146, 346, 352, 358, 410, 475, 492, 494, 498, 513-514, 891, 1091, 1144-1145, 1153, 1157-1159, 1335, 1703, 1756, 1805, 2072
Employee Well-Being 1, 5-6, 18-19, 21-22, 25, 33, 35, 148, 205, 215-216, 219, 325, 336, 339, 342, 370, 387, 687, 700, 956, 1162, 1165-1167, 1172, 1198, 1217, 1541, 1545, 1626, 1629, 1636, 1702, 1710, 1712-1713, 1753, 1785, 1799-1802, 2073, 2075, 2078, 2082, 2085
Employee Work Engagement 137, 139, 1743
Employer 28, 36, 57, 101-103, 132, 172, 174, 273, 307, 341, 361, 397, 404-405, 407, 474-475, 477-478, 480, 488-489, 498, 500, 511, 529, 542, 645, 664, 670, 673, 675-676, 703, 716, 826, 830-831, 834, 988, 1024, 1026, 1028-1029, 1031-1032, 1035-1037, 1055, 1062, 1141, 1143, 1153-1156, 1160, 1171, 1176, 1197, 1205, 1257-1258, 1332, 1335, 1614, 1620, 1671, 1688, 1692, 1734, 1749-1750, 1755, 1767, 1796, 1854, 1858, 1860, 1868-1869, 1875, 1907, 1938, 1941, 1973, 2020-2021, 2024, 2027-2037, 2040, 2077, 2096, 2106
Employment Loss 1255, 1273
Employment Process 1309, 1904, 1909, 1911, 1913
Employment Relationship 2, 1613, 1635, 1729, 2019, 2022, 2024, 2040
empowering leadership 150-154, 157-160, 162-163
enactive 303, 305-306, 314-315, 323
Energy Consumption 245, 585-593, 595-596, 725
Engineering Education 34, 811, 818, 1688, 1884-1885, 1888, 1892-1894, 1896-1902
Enthusiasm 139, 305, 327, 344, 520, 686, 771, 860, 899-900, 926-927, 929, 931, 1243, 1749, 1759, 1791-1792
Entrepreneurship 106, 112, 223-224, 226-227, 230, 232, 238-240, 298, 412, 433, 538, 1038, 1112, 1114, 1116, 1320, 1713, 1959, 1965, 2108-2109

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Epe General Hospital 1255, 1261, 1273
Epe Local Government Area (LGA) 1274
Equal Opportunity 275, 277-279, 287, 296, 302, 347, 349, 854, 1677, 1852, 1855, 1910
Equality Measures 1055, 1062
Ergonomic Design 603, 607, 614, 619, 621, 635, 640, 1512
Ergonomic Intervention 602, 1575, 1601
Ergonomic Method 1550
Ergonomical Risks 1042
Ergonomics Assessment 1550, 1573, 1575
ergonomics benefits 415
Ergonomics Risk 247, 1550, 2117
ethics of care 283, 290, 302
ethics of justice 283, 302
ethics of rights 283, 290, 302
ethics of virtue 283, 302
ethnic minority (BME) businesses 390
Ethnicity 87-89, 93, 98, 100, 104, 108, 110, 113, 116, 118, 122, 129-130, 132, 168, 308, 347-348, 392, 810, 817, 826, 841-844, 853, 936, 1056, 1058, 1060, 1062, 1066, 1078, 1088-1093, 1096-1098, 1101, 1104, 1120, 1168, 1236, 1243-1244, 1283-1284, 1291, 1648, 1683, 1688, 1724, 1812, 1821, 1823, 1826, 1833, 1855, 1903, 1947, 1974, 1999, 2024, 2087, 2107
Ethnocentrisms 109, 113
Evaluation Of Mental Workload 66-67, 884
Exercise Programmes 2069
Exhaustion 54, 139, 141, 213, 244, 332, 368, 370, 372-374, 376, 379, 381-382, 441-443, 445, 448, 451, 455, 458-459, 461, 463-464, 466, 470, 518-519, 543, 557, 565, 647, 712, 726, 759, 765, 792, 858, 862-863, 866-868, 875, 880-884, 886-887, 890, 897, 899-903, 913-914, 916-918, 920, 926-927, 929-930, 934, 937, 1163-1165, 1174, 1238-1241, 1252, 1326-1327, 1334, 1336, 1375, 1378, 1393, 1396-1399, 1401-1404, 1409-1416, 1420-1422, 1424, 1428, 1436-1437, 1441, 1454-1457, 1473-1474, 1546, 1712, 1716, 1784, 1786-1788, 1790-1792, 1794-1795, 1797, 1801-1806, 1808-1809, 2004-2005, 2010, 2012, 2016
Expatriate 342, 858-859, 864-865, 867-868, 870-874, 876
expert power 1628, 1717, 1729
Explicit Lookism 1911, 1921

F

Farragher/Ellerth Standard 2040
Fatigue 6, 42, 54-55, 58, 66, 242-252, 256-258, 263, 266, 268, 331, 372, 417, 440, 443, 478, 543-544, 550, 553-554, 556-558, 562-565, 573-576, 578-579, 581, 583, 586-587, 589, 618, 621, 680, 712-713, 723, 758, 835, 882, 890-891, 899, 912-914, 916, 918, 924, 931, 1172, 1191, 1240, 1251, 1325, 1339, 1341-1343, 1358, 1360-1361, 1396-1399, 1401-1404, 1408-1411, 1413-1414, 1420-1421, 1423, 1428, 1450, 1480, 1487, 1794, 2015, 2119, 2127
favorable organizational environment 1380, 1385, 1390
favorable work environment 1367, 1384
Federal Agency 1390, 1963, 1965-1967
Female Education 1064
Female Employment 1044, 1046, 1064-1065, 1067-1071, 1077-1078, 1080, 1932-1934, 1936, 1938, 1942
Fitness Programmes 2069, 2077
FnB Enterprises 1175, 1179-1181, 1183, 1191-1192, 1195
force platform 570-571, 575, 577
Forklift 600-601, 607-610, 612-614, 619, 2020, 2027, 2032, 2036
fractionation 85, 87, 95, 97
Fred Luthans 203, 210-211
Frustration 71, 168, 284, 350-351, 353, 552, 671, 726, 835, 880, 901-902, 904, 908-909, 930, 1141, 1152, 1160, 1170, 1223-1224, 1327, 1339, 1343, 1353, 1355, 1358, 1360, 1365, 1396-1397, 1411, 1424-1426, 1480, 1719
Frustration Level 71, 1339, 1360, 1365
functional requirements 600, 604, 614
Future Of Work 1-2, 4-5, 9-10, 16, 19, 21, 35, 708, 738, 740, 1626, 1629, 1631-1632, 1636, 2070, 2073, 2081, 2085
fuzzy ahp 620-624, 640

G

gait 567-570, 573-574, 582
Gay 106, 112, 347, 853, 1276, 1278, 1280-1281, 1283, 1285, 1288-1289, 1295-1303, 1899, 2008, 2017
gender awareness 1043-1047, 1049, 1054, 1056-1057
Gender Discrimination 1046, 1049, 1056, 1304-1310, 1315-1318, 1320, 1323, 1773, 1775, 1909, 1919, 1931, 1942, 1983, 1989, 1991-1992, 1994, 1997
Gender Diversity 123-127, 133-134, 322, 1061, 1080, 1090, 1095-1096, 1098, 1101, 1118-1122, 1124-1125, 1290, 1945-1948, 1950, 1952, 1958-1961
Gender Gap 134, 1064-1067, 1069-1075, 1077, 1079-1080, 1085, 1976
Gender Inequality 1043, 1046-1049, 1054, 1056, 1061,

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1085, 1932
gender order 1043-1045, 1051-1054, 1056-1057, 1063
Gender Role 134, 821, 1323, 1987, 1999
Gender-Based Discrimination 1048, 1304-1305, 1931-1932, 1980, 1983, 1994, 1996-1997, 2000
Gendered Journalism 1980, 2000
Gendered management 1043
general obligation 1021, 1028-1029, 1034-1035, 1042
Generations At Work 1100, 1102, 1852, 1857, 1861-1862
global strategy 223-224, 229, 234-235, 237
GLOBAL TRENDS 2069, 2078
Grants 132, 283, 474, 762, 1142, 1597, 1963, 1965, 1967-1968, 1970-1973, 1977
growth mindset 1811, 1815-1816, 1818-1819, 1822, 1833

H

Hazards 168, 174, 185-186, 189-190, 198, 327, 470, 569, 581, 601-602, 620, 623, 639, 660, 664, 961, 963, 965-970, 986, 992-994, 1023, 1025-1028, 1030, 1032, 1035-1036, 1211, 1386, 1480, 1483-1485, 1491-1496, 1499, 1501-1502, 1504-1505, 1507-1511, 1520-1521, 1524-1525, 1533, 1537, 1583, 1600, 1608-1612, 1614-1616, 1704, 2025, 2041, 2050-2051, 2054, 2056, 2062
Hazing 166-167, 183
Health And Safety Hazards 1508, 1608
Health In The Workplace 185-189, 469, 705, 713, 1608
Health Program 190, 595, 692, 697-698
health technologies 668, 675, 678
healthcare managers 1101, 1162-1164, 1166-1167
Healthcare Professionals 758, 912-913, 1161-1167, 1172, 1298, 1395-1396, 1915
Healthy Lifestyle 466, 480, 952-953, 1150, 1430, 1756
healthy organizations 681-682, 688-689, 699-700, 702, 942, 945-946, 948
Healthy Workplace 50, 187-188, 519, 522, 534, 536, 542, 689, 944, 1162, 1715, 1725-1726, 2023, 2026, 2039
Heart Rate 68, 74, 384, 544, 556, 563, 585-587, 596-599, 724, 758, 763, 835, 1451
Heat Stress 588, 2055, 2057, 2059, 2061-2066
hidden discrimination 1046, 1048-1049, 1056-1057, 1059, 1063
Hiring 13, 15, 91, 105, 282, 287, 307, 329-330, 348, 502, 799, 807, 825-827, 832, 838, 1046, 1098, 1121, 1197, 1249, 1372, 1429, 1558, 1670, 1684, 1692, 1761, 1811, 1819-1821, 1823, 1825-1828, 1831, 1868-1870, 1873, 1878, 1889, 1901, 1907-1908, 1911-1913, 1915, 1918-1919, 2030, 2032, 2040
HOQ 639, 642
Hospitality 35, 146, 241, 342, 354, 403, 542, 893, 1058-1062, 1210, 1218-1220, 1308, 1311, 1313, 1317-1321, 1323, 1465, 1635, 1764, 1780, 1834-1835, 1837-1840, 1842-1843, 1845, 1848-1849, 1918
Hostile Work Environment 288, 302, 2019-2020, 2026-2028, 2032, 2034, 2039
Hostile Workplace 2040
HR Crisis 367-368, 382
HR Practices 114, 116, 120, 132, 345-346, 348-350, 352, 355-356, 358, 360, 957, 1815, 1823
HRD professional 1870, 1872, 1877, 1883
Human Errors 559, 923-924, 972, 1477, 1486-1489, 1492, 1494, 1499-1500, 1502, 1504-1505
Human Factor 37, 112, 187, 242-243, 622, 814, 879, 958, 968, 983, 1478, 1486-1487, 1489-1490, 1492, 1807
Human Factors 19, 35, 81-83, 250, 384, 386, 431-432, 493, 544-545, 563-566, 568, 598, 617, 640-641, 723, 734, 892, 894, 896-897, 922, 945, 991, 1158, 1233, 1361-1365, 1474, 1477-1480, 1487-1490, 1502-1505, 1529, 1541-1543, 1545-1547, 1572-1574, 1890, 1896, 1899, 1903, 1929, 2114-2115, 2117-2119, 2123-2128
Human Resource Development 14, 133, 142, 144-149, 162, 216, 219, 292, 294-295, 299-301, 384, 807, 810, 812-816, 820, 822-823, 1140, 1252-1254, 1335, 1621, 1641, 1665, 1676, 1678-1679, 1683-1685, 1688-1689, 1691, 1866, 1875, 1877, 1879, 1881, 1883, 1904-1905, 1909, 1911, 1913
Human Resources 8, 12, 35, 52-60, 64, 118, 144-145, 147, 176, 193, 196, 203, 205, 208-209, 222, 292, 294, 297, 299, 320, 345, 348, 359, 368, 447, 450, 491-492, 496, 500, 512, 517, 521, 535, 581, 622, 643-655, 657, 660-661, 751-752, 762, 769, 793, 810-812, 814-816, 859, 871, 893, 913, 939, 945, 950, 999, 1020, 1060, 1062, 1083, 1103-1104, 1139-1140, 1145, 1167, 1195, 1218, 1225, 1253, 1320, 1323, 1425, 1623, 1630, 1641, 1661, 1676, 1679, 1681, 1684-1687, 1720, 1724-1725, 1734, 1741, 1748, 1750, 1753, 1761-1762, 1796, 1803, 1863, 1876-1878, 1881-1882, 1900, 1916, 2025, 2084
Human Strength 570, 575-576, 578, 1796
humanistic management 185, 195-197, 199

I

ICT employment 1064-1065, 1067-1068, 1070-1072, 1077-1080, 1084-1085

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ICT Sector 10, 1064-1073, 1077-1080, 1085-1086
Idea Generation 605, 1120, 1892, 1903
image carousel 2095, 2098, 2110
Impersonation 169-170, 183
Implicit Bias 301, 1819, 1821, 1823, 1826, 1830, 1907, 1915
Implicit Lookism 1921
Incivility 178, 290, 384, 1237-1245, 1247-1254
inclusive growth 742-750
inclusive markets 742-749
individual strategies 1051-1052, 1054, 1057
Industrial Relations 20, 134, 355, 474, 476, 492, 498, 501, 504, 687, 940, 1039, 1083, 1144-1145, 1157-1160, 1173, 1686, 1919
Industrial Sector 73-74, 77, 80, 416, 427, 515, 1350, 1384, 1441, 1506, 1933-1934
Information Security 707, 710-711, 716-718, 725, 729, 731, 734, 737-739, 991, 1785
Information Technology Professionals 162, 384, 386-388, 1454, 1476, 1785, 1790-1791, 1802-1803, 1805, 1808-1809
Informational Power 1717, 1729
institutional norms 825, 830-831
Institutionalization 744, 746-747, 1054, 1392-1393, 1395
Insurance 10, 15, 130, 187, 191, 327, 350, 411, 474, 476, 478, 481, 483, 498-499, 502-504, 602, 682, 882, 992, 1021, 1025, 1029-1030, 1037, 1142-1146, 1150, 1197-1198, 1205-1206, 1229, 1233, 1255, 1261, 1264, 1267-1270, 1272, 1288, 1540, 1749, 1858, 1924, 1931, 1933, 1936-1942, 2008
Intellectual Intelligence 1671, 1692
Intentional Infliction 2019, 2022, 2038, 2040
Intentional Interference 2019, 2022, 2024, 2040
intercultural capital 1637, 1640-1641, 1653-1654
intercultural competence 1639, 1649, 1654-1655, 1657
intercultural management 1646-1647, 1652-1653, 1661
Intercultural Organization 93, 1637-1640, 1642-1654, 1662
Intercultural Relations 134, 218, 769, 854, 870, 1117, 1235, 1637-1638, 1640, 1642-1646, 1648-1649, 1652, 1655-1656, 1658, 1660-1661
Intercultural Sensitivity 777-778, 846, 854-855, 1639, 1649, 1651-1652, 1654-1656, 1658, 1916
International Classification 250, 913, 1285, 1414, 1421
inter-observer reliability 1564-1566, 1575
Interpersonal Relationships 22-25, 27-31, 153, 161, 163, 196, 350, 352, 476, 521, 527, 646, 768, 913, 917, 1212, 1276, 1314, 1398-1399, 1417, 1428, 1645, 1654, 1756, 1772, 1817, 1820, 1906, 2020
Interpersonal Trust 150, 153, 158, 162, 1712, 1910
Inter-Personnel Diversity 294, 307, 320, 798, 804, 812, 1663, 1669, 1672-1675, 1679, 1692
Intersections of Oppression 1903
Intimidating 170, 183, 288, 302, 1722, 2023, 2026
Intolerance of Uncertainty 2004-2005, 2017
Intra-Observer Reliability 1565-1566, 1575
Ism 411, 642, 1919
isokinetic 567, 570, 575-576, 579
isometric 567, 570, 575-576, 579, 581
isotonic 567, 575-576
IT Industry 155, 158-159, 161, 367, 369, 373, 382-383, 385-386, 1125, 1157, 1454-1456, 1465, 1468-1473, 1923, 1927
IT Professionals 367-369, 371, 373-375, 378-383, 386, 936, 1334-1335, 1454, 1784-1791, 1796, 1800-1802, 1804-1805, 1808-1809

J

Job Anxiety 324, 327, 332-333, 338, 340-342, 1459
Job Autonomy 28, 332, 898-899, 910, 1166, 1807
Job Burnout 147, 160, 332, 341, 369-370, 372, 379-380, 382, 386, 388, 470, 539, 858-860, 862-868, 870, 872-876, 880, 890, 893-894, 910, 928, 937, 939-941, 1168, 1170, 1211, 1219, 1334, 1363, 1784-1786, 1789, 1791, 1794, 1798-1799, 1806, 1809
Job Conditions 367, 371-377, 379-383, 469, 818, 871, 1386, 1528, 1537
Job Content Questionnaire 255, 271, 439
job culture 53-54, 56
Job Demands 139-140, 144, 148, 243, 247-248, 266, 271, 332, 371, 387, 534, 563, 586, 699, 709, 714, 736, 860, 874, 890, 893, 895, 900, 937, 940, 948, 1163, 1169, 1217, 1528, 1541, 1545, 1601, 1793-1794, 1799-1800, 1802-1803, 1807-1809
Job Demands-Resources Model 7, 64, 137, 139, 144-145, 149, 176, 869-870, 937, 1794-1795, 1803-1804
job depression 324, 327, 331-332
Job Insecurity 1, 33, 177, 183, 682, 688, 711, 891, 1104, 1362, 1525, 1718, 1802
Job Resources 139-140, 144, 148-149, 271, 329, 387, 860, 874, 895, 940, 1528, 1541, 1545, 1547, 1787, 1794, 1803, 1807-1810, 2037
Job Satisfaction 1, 54, 60, 126, 129-130, 141, 143-144, 149, 151, 161, 168, 213, 225-226, 276, 296, 324, 327, 329-330, 332, 334, 336, 338, 340-343, 370, 380, 384-385, 388, 497, 511-513, 516, 518-522, 524-539, 541-542, 643, 687-688, 726, 754, 764, 769, 831, 834-835, 864, 871, 878, 882, 884, 890-891, 893-894, 896, 911, 923, 937-938,

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940, 946-947, 1001, 1017, 1156, 1161, 1163, 1165-1167, 1173-1174, 1178, 1191, 1198, 1204, 1207, 1209, 1211, 1213, 1218-1219, 1237-1245, 1247-1253, 1314, 1324-1338, 1372, 1385, 1403, 1413-1414, 1420, 1429, 1457, 1530, 1543-1545, 1622, 1626, 1628, 1631, 1647, 1701, 1732-1733, 1745, 1757, 1759, 1764, 1766-1767, 1781, 1785, 1788, 1798-1799, 1801, 1807-1808, 1873, 1875, 1879, 1883, 1923-1924, 1929-1930, 2011, 2017, 2037, 2069, 2078-2083
Job Search 1227-1231, 1234, 1236, 1788
Job Stressors 862, 882, 893, 929, 958, 1456, 1784-1785, 1793
Journalist Safety 1998, 2000

K

kinematic 567, 569
kinetic 567-569, 575
Knowledge Management 19, 163, 196, 232, 304, 319, 321, 323, 344, 384, 415-417, 429, 431, 433, 439, 444, 466, 469-471, 996-1000, 1002-1006, 1009-1020, 1080, 1647, 1753, 1849, 2089, 2108

L

Labor Force 193, 323, 495, 644, 770, 1041, 1064-1069, 1076, 1078, 1080-1082, 1085-1086, 1231, 1309, 1319, 1578, 1755, 1868, 1931-1937, 1942
Labor Market 116, 307, 517, 815, 1044, 1047, 1055, 1063, 1082-1083, 1176, 1233-1234, 1309, 1318, 1747, 1760, 1829, 1907, 1917-1918, 1931, 1933, 1936, 1942
Labor Welfare 489, 515, 688
Lagos Mainland Local Government Area (LGA) 1274
law enforcement agents 926-930, 935-936
Leadership Development 149, 159, 307, 320, 532, 796, 799, 802, 804-805, 808, 812, 816, 823-824, 1663, 1679, 1686, 1822, 1881
Leadership Style 129, 158, 161, 516, 519-520, 522-526, 528-529, 542, 1696, 1704, 1706, 1800, 1841, 1849, 1948
Lean Thinking 250-251
Lesbian 853, 1276, 1281, 1283-1285, 1288-1289, 1295-1303, 1899
Life Events 38-39, 47, 50, 212-213, 726, 836, 1222, 1229-1231, 1233, 1236, 1660, 1854
Linguistic Descriptors 1575
Literature Review 34, 36, 52, 66-67, 77, 80, 128, 149, 151, 176, 273, 298-299, 317, 346, 384, 418, 422, 522, 530-531, 535, 537, 543, 545, 587, 602, 604, 616, 621, 623, 641, 664-665, 810, 921, 928, 996, 998, 1004, 1066, 1089, 1123, 1125, 1137, 1176, 1259, 1295-1296, 1335, 1341, 1343-1344, 1367, 1372, 1380, 1385, 1419, 1460, 1463-1464, 1477-1478, 1508, 1512-1513, 1545, 1583, 1594, 1600, 1623, 1709, 1728, 1745-1746, 1763, 1771, 1812, 1924, 1983, 2088, 2115, 2119, 2128
Lived Experiences 275-276, 280-281, 287-289, 291, 302, 1165, 1222-1225, 1232, 1234, 1281, 1294
Location Value 291, 803, 1666, 1669, 1692
long-term contract employees 1196, 1198-1200, 1202, 1204
lookism 1904-1915, 1917-1919, 1921

M

Macroergonomics 84, 251, 599, 942-943, 959, 1453, 2111-2129
Macroergonomics applications 2111-2113, 2115
Maintenance Value 1692
major accident 960-961, 963, 965-966, 979, 981-983, 990, 993-994
major accident prevention 960-961, 990
management of older employees 1744-1745, 1748, 1750, 1760-1761
Management Systems 20, 187, 189, 197-198, 433, 444, 722, 757, 986-988, 1014-1015, 1544, 1619-1620, 1659, 1666, 1673, 1682, 1737, 1758, 2090, 2107, 2116
Managing Diversity 122, 132, 276-281, 283-284, 292-297, 300, 302, 319, 409, 800, 810, 856, 1099-1101, 1116, 1120, 1657, 1675, 1882, 1915, 1919
Manufacturing Industry 26, 28-29, 66-67, 77, 79-80, 82, 415, 417, 422-423, 434, 440-442, 444, 464, 470, 515, 601, 1341-1342, 1348-1349, 1367, 1380, 1384-1385, 1435, 1438, 1445, 1447, 1450, 2046, 2122
Manufacturing Systems 75, 77, 80-81, 415, 429, 604, 895, 957, 2111, 2120, 2126
Marginalized 129-130, 275-276, 278, 280-281, 283, 286-289, 291, 302, 319, 685, 745, 749, 798-800, 802, 806, 808, 825-827, 836, 843, 1297, 1311, 1663, 1665, 1723-1725, 1813, 1818, 1823, 1825-1827, 1830, 1833, 1957
Marked Bodies 88, 97
Martin Seligman 203-204, 945
Maslach Burnout Inventory 65, 141, 372, 439, 445-446, 467, 469-470, 862, 895, 902, 923, 939, 1435, 1441, 1795, 2010
Mature Workforce 303, 306, 315-316, 323, 812, 1680
MBI-GS 141, 445-447, 470, 926, 929, 934, 1435,

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1441, 1452, 1795
Mediation Effect 158, 1324, 1331
Medical Academic Faculty Burnout 2004
Mental Demand 71, 552, 555-556, 1339, 1343, 1351, 1353, 1355, 1358, 1360, 1365
Mental Health 1, 8, 16, 19-20, 23, 25-26, 33, 37-38, 74, 165, 168, 173, 204, 217-218, 222, 226, 252, 268, 271, 273, 325-326, 339, 343, 368, 379, 469-470, 518, 521, 530-533, 535-538, 540-541, 621, 641, 679, 682, 705, 709, 711-713, 730, 732-733, 738, 740-741, 835-836, 838, 872, 892, 913, 923, 938, 944, 948, 956, 958, 1027, 1155, 1161-1162, 1164, 1168, 1170-1171, 1199, 1201, 1209, 1213, 1217-1218, 1232, 1234-1235, 1276-1277, 1279, 1282-1283, 1285-1286, 1290-1292, 1294, 1297, 1300-1303, 1338, 1343, 1361-1363, 1369, 1376, 1386-1387, 1393, 1404, 1410, 1420, 1435-1436, 1458, 1542, 1638, 1701, 1704, 1708, 1723-1724, 1728, 1749, 1756, 1767, 1876, 1881, 1924, 1929, 2005, 2008, 2011-2013, 2015-2018, 2037, 2077-2078, 2083-2084, 2122
Mental Workload 66-71, 73-77, 79-84, 543-545, 560, 563-566, 877-880, 882-892, 894-897, 1339-1346, 1348-1349, 1351-1366, 1368, 1391, 1433, 1597, 2119, 2124
Menu 948, 1860, 2092-2093, 2095, 2097-2098, 2110
metaheuristics 643, 645, 648
Mexico UPAEP 681
mHealth 663-665, 672, 674-678, 680
Microergonomics 2111-2112, 2128
Mindfulness 13, 56, 58, 220, 348, 355, 539, 665, 761, 875, 952-953, 1166, 1715-1716, 1718-1720, 1727-1728, 1730, 1815, 2004, 2007-2008, 2010, 2012, 2018, 2085
Ministry of Labor and Social Welfare (STPS) 1367, 1379, 1384, 1390
Minority 86, 88-90, 93, 96, 99, 102, 113, 118, 120, 175, 292, 323, 348-349, 354, 390-392, 401, 403-405, 412-413, 769, 807, 810, 817, 822, 830, 833, 838, 840, 842-844, 846, 853, 1233, 1236, 1283-1284, 1298, 1314, 1647, 1653, 1666, 1691, 1813, 1824, 1874, 1886, 1888, 1899, 1903, 1910, 1963-1966, 1968, 1970-1971, 1975
MMH 567, 576-578
Modification Value 1692
moral development theory 898, 906-907
Moral Harassment at Workplace 1042
motion capture 569, 571-572, 575
Multiculturalism 98, 107-109, 113, 121, 131, 286, 299, 314, 770, 832, 844, 856, 1637-1638, 1641-1642, 1646, 1649-1651, 1662, 1682
Multidimensional Construct Metacognitive 1643, 1662
Muscle 41, 51, 242, 244-247, 249-251, 569-570, 573-576, 578, 581, 583, 587-588, 602, 617-618, 712, 724, 864, 1583, 1704, 1716, 1756, 1818
Musculoskeletal Disorders 74, 243, 245, 416, 419, 432, 443-444, 567-569, 581-585, 597, 600-601, 615, 641, 643-644, 1377, 1401, 1404, 1508-1509, 1512, 1521, 1523-1524, 1550, 1573-1574, 1577, 1581-1585, 1596-1602, 1756, 2119, 2123
Mutual Welfare 478, 515

N

NASA-TLX 69, 71, 77, 80, 82, 543, 564, 892, 1339-1343, 1345, 1362, 1364-1365
Negligence 710, 1392, 1487, 1502, 1611
Negotiation 24, 124, 233, 317, 767, 772-774, 776, 779-780, 783-784, 789-793, 874, 1644, 1839, 1985
news media 1980-1989, 1991-1997, 1999-2001
Newsroom practices 2000
Nigeria Institute of Medical Research 1255, 1260, 1273-1274
Nigerian media industry 1986, 1990
Nigerian women journalists 1980, 1982-1983, 1986, 1992, 1994-1995
NOM-035-STPS-2018 1369, 1384, 1389-1390
Non-Statutory 473-474, 476, 478, 481, 488-489, 499, 506-510, 512, 1146
norm compliance 707, 719
Normal Weight 439, 441-442, 448-449, 453-455, 458-459, 461, 464-466, 1442-1443
Norms and Expectations 1834
Number Of Children 442, 445, 1339, 1341, 1343, 1349, 1355-1356, 1360, 1936
Nursing 19, 33-35, 161, 319, 516-527, 530-542, 564, 687, 690, 700-702, 704, 823, 845, 848-849, 855-856, 870, 872, 912-916, 920-925, 927, 938, 955, 1164, 1167-1169, 1171, 1173, 1253-1254, 1297-1299, 1303, 1364-1365, 1386-1387, 1389, 1406-1407, 1423-1426, 1428, 1430, 1432-1434, 1451, 1505, 1521, 1545, 1599, 1601, 1712, 1742, 1757, 1782, 1880, 1907, 1917, 2042, 2054, 2119

O

Obesity 9, 439-444, 451, 453, 464, 466, 468-469, 695-696, 753, 930, 1197, 1209-1210, 1214, 1364, 1435-1438, 1441-1443, 1450, 1599-1600, 1776
observational method 1552
Obstacles 41, 118, 209, 310, 664, 666, 807, 828, 850, 858, 1051, 1066-1067, 1276, 1286, 1310-1312,

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1315-1316, 1321, 1409, 1651, 1769-1771, 1773-1776, 1867, 1902, 1931, 1942, 1961
Occupational Groups 1191, 1214, 1316, 1409-1410, 1430, 1432, 1508, 1526-1527, 1530, 1540, 1786, 2057-2058
Occupational Health 177, 181-182, 186-187, 189-190, 197, 216, 220, 249, 251, 266, 270-271, 273, 326, 361-362, 384, 418-419, 423, 432-433, 522, 536, 539-540, 567-570, 572-575, 581-582, 595, 622, 637, 644, 664, 666, 668, 677, 680, 687, 874, 940, 991, 1015, 1021, 1024-1025, 1028, 1035, 1038-1042, 1170, 1172, 1227-1228, 1231-1232, 1234, 1236, 1251-1252, 1254, 1337-1338, 1361, 1369, 1376, 1381, 1386-1387, 1389-1391, 1476, 1483, 1488, 1508-1509, 1512, 1523-1525, 1541-1542, 1546, 1608-1610, 1612-1615, 1617-1625, 1703-1704, 1708, 1754, 1758, 1762, 1767, 1773-1774, 1803, 1808, 1853, 1861, 1938, 1941, 2019, 2021, 2051, 2054, 2057, 2060, 2084, 2086, 2120
Occupational Health And Safety 186-187, 189-190, 197, 251, 326, 418, 432-433, 637, 677, 991, 1015, 1021, 1024, 1028, 1038-1042, 1234, 1236, 1483, 1508, 1512, 1523-1524, 1608-1610, 1612-1615, 1617-1621, 1624, 1704, 1754, 1762, 1938, 1941, 2021, 2084, 2086
Occupational Safety and Health Act 2025, 2040, 2090, 2095, 2106
Occupational Segregation 285, 302, 807, 809, 813, 1223, 1314
Occupational Stress 253, 255, 266, 269-270, 339, 368, 384, 386, 440, 442, 545, 838, 893, 913, 923, 937-940, 957, 1161-1167, 1169-1172, 1174, 1338, 1343, 1361, 1390, 1397-1398, 1433, 1441, 1456-1458, 1474-1476, 1510, 1523, 1704, 1763, 1766, 1794, 1798, 1807
OHS 187, 189-190, 197-198, 251, 636, 1021-1029, 1031-1036, 1508-1509, 1513, 1608-1609, 1612, 1614, 1617-1621, 2098
Older Employees 304, 586, 598, 1091, 1469, 1472, 1744-1762, 1766-1768
Optimism 4, 12, 181, 205-212, 216, 221-222, 305, 520, 709, 928, 949, 954, 1045, 1116, 1737, 1796
Organization Commitment 1254, 1626, 1628, 1630-1631, 1635
Organization Diversity 841, 1674, 1866
Organizational Citizenship Behaviour 143, 1324, 1338, 1700, 1712, 1714
Organizational Commitment 126, 129-130, 137-138, 143, 145, 150-152, 154-155, 157-159, 161-162, 336, 340, 343, 364, 385, 521, 530, 533, 688, 872, 878, 881, 955-956, 1100, 1124, 1153-1154, 1239, 1241, 1319, 1327, 1334-1335, 1337-1338, 1455-1457, 1472, 1475-1476, 1628-1629, 1682, 1709, 1758-1759, 1767, 1785, 1788, 1793, 1798, 1801, 1871, 2082
Organizational Culture 38, 99, 110, 114, 116, 123, 134, 161, 174, 204, 282, 298-299, 302, 365, 368, 383, 413, 683-684, 686, 691, 697, 700, 737, 767-772, 778, 795, 810, 820, 878, 881, 948, 954, 957, 1012-1013, 1019, 1101, 1165, 1314, 1319, 1336, 1375, 1436, 1455, 1612, 1635, 1643, 1650, 1654, 1657, 1689, 1697, 1715, 1717, 1724, 1730, 1753, 1759, 1764, 1767, 1770, 1815, 1819-1820, 1828, 1848-1849, 1867, 1875-1876, 2120
Organizational Interventions 942, 1801, 2115
Organizational Leadership 192, 291, 528, 767, 815, 820, 831, 1654
Organizational Performance 84, 116, 126, 131, 133, 212, 251, 299, 304, 354, 384, 540, 599, 794, 844, 878, 881, 959, 1019, 1101, 1145, 1176, 1218-1219, 1311, 1340, 1453, 1635, 1640, 1643, 1645, 1673, 1741, 1759, 1813, 1852, 2128-2129
Organizational Social Justice 288, 802
Organizational Stress 687, 922, 1335, 1338, 1434, 1454-1459, 1463, 1465, 1468-1473, 1476, 1712
Organizational Wellbeing 36-37, 52, 681, 687, 690-692, 697, 711
organizations with purpose 185-186, 197-198
OSH e-government 2087, 2105, 2110
Osha 419, 432, 979, 994, 1038, 1496, 1503, 1505, 1618, 1622, 1714, 1764, 2025, 2033, 2037, 2040, 2086, 2091, 2095-2098, 2101-2102, 2106, 2108
outdoor informal sector workers 2055, 2057
Overt Discrimination 98, 102, 1046, 1063, 1855
Overweight 439-444, 448-449, 451, 453, 459-460, 462-466, 469, 677, 695-696, 1437, 1442-1444, 1450

P

p. Leisure 1208
Pan-African Investment Code 742, 747, 749-750
Participation 5, 130, 189, 195, 241, 244, 309-310, 313, 348, 360, 393, 418, 420-422, 426, 519, 523, 583, 663-665, 670, 675, 679, 686, 689, 691, 693-695, 697, 760, 762, 790, 883-884, 890, 916, 930, 936, 946-947, 950-951, 980, 986, 990, 1001, 1007, 1017, 1022, 1027, 1033, 1036, 1040-1041, 1044, 1047, 1060, 1064-1069, 1077-1079, 1081, 1083, 1085, 1122, 1152, 1178, 1198-1199, 1203, 1209-1211, 1213-1214, 1217, 1219, 1224, 1226, 1235, 1264, 1267, 1269-1270, 1293, 1301, 1306, 1314, 1319, 1332, 1368, 1390, 1400, 1415, 1420, 1423,

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1428, 1437, 1491, 1530, 1539, 1618, 1647-1648, 1674, 1716, 1733, 1741, 1747, 1751, 1756, 1760, 1768, 1802, 1867, 1880, 1886, 1900, 1915, 1931-1937, 1942, 1947-1948, 1965, 1984, 2006-2007, 2012, 2027, 2111, 2118
Patient Safety 531, 763, 765, 912-915, 917-918, 920-925, 1164, 1434, 2118-2119, 2123-2124
Pay Grade 845, 1963, 1967, 1972
Pest Control 2041-2042, 2045-2046, 2050, 2054
Pesticide 1509-1511, 1520-1521, 1523-1524, 1577, 1579, 1581, 1586-1589, 1594-1596, 2041-2046, 2048-2054
Pesticide drift 2043, 2054
Pesticide Handling 1511, 2054
physical appearance 1904-1905, 1907-1909, 1912, 1921
physical attractiveness 1904-1909, 1911-1921
Physical Demand 71, 552, 1339, 1343, 1353, 1355, 1358, 1360, 1365
Physical Ergonomics 560, 563, 1340, 1362
Physical Fatigue 245, 251, 553-554, 556, 587, 1399, 1402-1403
Physical Hazards 1023, 1510-1511, 1525
Physician Burnout 739, 764-765, 896, 2004, 2006
Polylingualism 98, 108, 113
Positive Psychology 32, 50, 203-205, 207-210, 212-213, 215, 217-218, 220, 222, 362, 386, 684, 688, 703, 942, 945, 958, 1796
Postural Load 613, 619, 1550, 1554, 1556-1557, 1562
Postural Risk 600, 613, 619, 1557
Practical Implications 52, 147, 268, 358, 889, 910, 1333, 2063
Presenteeism 254, 256, 269-271, 274, 519, 535-536, 711, 736, 1196-1207, 1385
Presumed Incompetent 294, 302
Prevention 57, 164, 172, 174, 177, 185-186, 189-191, 197-198, 245, 247-248, 422, 426, 430, 432, 441, 478, 496, 519, 522, 559, 568-569, 575, 621, 660-662, 664, 683, 688-690, 692, 696-697, 700-701, 703, 713, 719, 725, 776, 875, 891, 894, 912, 922, 924, 942, 944, 949, 951, 953, 955, 960-961, 963, 981, 983-995, 1001, 1019, 1021-1022, 1024-1030, 1034-1036, 1122, 1162, 1167, 1169-1170, 1203-1206, 1210, 1215, 1256, 1259, 1269, 1271, 1368-1369, 1380, 1385, 1391, 1393, 1422, 1430-1432, 1434, 1478-1479, 1488, 1493, 1503-1506, 1509, 1520, 1529, 1537, 1543, 1546-1547, 1550, 1552-1553, 1597, 1609, 1624-1625, 1704, 1708, 1758, 1806, 1984, 2008, 2016, 2037, 2056-2057, 2059-2064, 2071, 2106, 2112, 2122-2123, 2125
Private Market 233, 241
Private Sector 16, 194, 380, 391, 474-476, 482, 490, 492, 496-498, 505-512, 514-515, 743, 1047, 1141-1143, 1145-1152, 1155-1156, 1158, 1232, 1325, 1457, 1664, 1936, 1966, 1973, 2102
Private Universities 496, 889, 1088, 1092-1093
Problem Definition 392, 1892, 1903
Process Safety 960-961, 963, 979, 981, 991-993, 995, 1477-1479, 1483, 1488, 1499, 1503-1507
Professional Burnout 340, 912, 922-923, 1392, 1408-1409, 1431-1434
professional settings 1885, 1892, 2041
Profitability 106, 138-139, 143, 187, 194, 224, 242, 327, 394, 397, 408, 687, 711, 931, 1003, 1305, 1613, 1629, 1741, 1759, 1945-1948, 1956, 1961, 1975, 2074, 2078, 2081
PRONABET 1377, 1391
Prototyping 739, 1892, 1895, 1903
Psychological Capital 162, 203-212, 214-222, 1544
Psychological Health 145, 253, 516, 518-522, 524-530, 533, 539, 542, 689, 959, 1227, 1391, 1545, 1644, 1646, 1711, 1853, 2037
psychological investment 898-899
psychological resilience 207-209, 212, 216, 222
Psychological Safety 1017, 1703, 1811-1812, 1815-1819, 1821-1822, 1825, 1829, 1831, 1833
Psychological Stress 25, 252-255, 540, 568, 759, 913, 956, 1168, 1659
Psychosocial Factors 181, 273, 465-466, 682, 883, 892, 943, 1367-1370, 1372, 1375, 1377-1378, 1380-1381, 1384-1385, 1390, 1526-1529, 1532, 1598, 2108, 2122
Psycho-Social Hazards 1525
Psychosocial Risk Factors 181, 697, 953-954, 1368-1370, 1380-1381, 1384-1385, 1391, 1436, 1598
Psychosocial Risks 444, 646, 944, 1023, 1042, 1168-1169, 1368, 1372, 1377, 1381, 1389, 1391
psychosomatic symptoms 1409-1410, 1423, 1432
Public Administration 96, 112, 296, 533, 699, 838, 840-843, 845-847, 849, 851-857, 1101, 1319, 1390, 1883, 1975, 2106-2110, 2113, 2121, 2125
Public Sector 179, 476, 494, 496-497, 505, 507-508, 510, 512-513, 515, 743, 823, 851, 853, 855, 1142-1143, 1147, 1149-1152, 1543, 2082, 2106, 2127
Public Service 182, 285, 513, 840, 846, 853-854, 856, 1017, 1217, 2082-2083, 2088, 2090, 2105
purchasing social responsibility (PSR) 390-391, 402, 406
Purposeful Games 720-721, 728

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Q

QFD 615, 620-622, 637, 639, 642
Qualitative Study 20, 346, 663, 666, 677-678, 899, 904-905, 938-939, 1172, 1223, 1232, 1236, 1300-1301, 1880
Quality Of Life 8, 47, 80, 166, 186, 188, 203-204, 211, 223, 225-228, 230, 238-240, 402, 415, 438, 442, 473, 480, 490, 498, 512, 536, 568, 643-644, 647-648, 683, 697-698, 788, 792, 936, 1034, 1156, 1161-1168, 1170, 1172, 1174, 1195, 1231, 1342-1343, 1363, 1370, 1375, 1389-1390, 1393, 1395-1396, 1432, 1437, 1450, 1600, 1621, 1653, 1698, 1706, 1751-1752, 1754, 1768, 1843, 2012, 2083
Quality Of Work-Life 116, 130, 351, 475, 481, 490, 492, 495-496, 498, 511-512, 514, 537, 687, 701, 703-704, 1143-1144, 1151, 1155-1156, 1158-1159, 1175, 1179, 1183-1184, 1188, 1190-1191, 1195, 1370, 1600, 1861, 1922-1930
Quantitative Methods 382, 937, 1118-1119, 1138, 1205
Quantitative Risk Assessment 960, 966, 972, 991-992, 994, 1479, 2067

R

RCRA model 242
Reactive Bullying 165, 183
REBA 600, 602-603, 606-608, 613, 615-616, 1340, 1566-1567, 1573, 1584
reflexivity 85, 92, 96-97, 347
Relational Bullying 165, 184
Representative Bureaucracy 840, 842, 855-856, 1974-1975
Research Limitations/Implications 52
Resident Burnout 921, 2004, 2009, 2015
resident physician 2004, 2009, 2016, 2018
resident wellness 2008, 2015
reskilling 1, 9-14, 16-17
Resources And Capabilities 203, 223-224, 232, 241, 1496
responsible leadership behaviour 1693, 1696, 1702-1703, 1705-1706
retention strategies 1786, 1801
Retirement 103, 130, 303-304, 309, 318, 344, 480-483, 485, 487-488, 490, 498, 506-508, 511, 597, 647, 662, 753-754, 803, 931, 1146-1147, 1150, 1152, 1156, 1455, 1526-1527, 1529, 1531, 1533, 1537, 1539-1540, 1544-1545, 1702, 1746, 1751, 1754-1755, 1759, 1764, 1790, 1853, 1858, 1865, 1871, 1877, 1937, 1959, 2078
Reward Power 1717, 1730
ribbon 2092, 2095, 2110
Rich Snyder 203-204, 206
risk analysis methods 960, 991-992
Risk Assessment 247, 326, 545, 559, 603, 641, 646, 960-961, 963, 965-966, 972, 981-984, 986, 991-995, 1022, 1029, 1479, 1485, 1489, 1504, 1521-1524, 1550, 1552, 1600, 1610, 2067
Risk Management 177, 191, 197-198, 394, 405, 411, 636, 692, 960, 963-964, 966, 979-983, 991-995, 1019, 1491, 1537, 1542, 1704, 1714, 1817, 2035, 2059, 2120-2121, 2125
Rnd 384, 1102, 1115-1116, 1951-1952, 1963, 1965-1968, 1970, 1972-1975
ROA 1948, 1950, 1952, 1956-1957, 1962
Roadway Express 1731
Robotics 1-3, 5, 7-9, 11, 14, 20, 193, 618, 734, 1631, 1888, 2071
ROE 1950, 1952-1953, 1956-1957, 1962
Role Stress 179, 383, 386, 893, 1324-1332, 1336-1337, 1454-1459, 1462, 1464-1465, 1467-1470, 1472-1476, 1801, 2013

S

Safety Barriers 966, 995
Safety In The Workplace 67, 185, 197, 623, 635, 664, 1368, 1425, 1609, 1616-1617, 2090
Safety Management 187, 190, 197, 433, 636, 644, 677, 967, 979, 981, 986, 988, 991, 993, 996-998, 1001-1007, 1009-1019, 1024-1025, 1038, 1479, 1487, 1489, 1529-1530, 1532, 1544-1547, 1613-1614, 1620, 1623, 2090
Salary 5, 56, 91, 126, 329, 434, 517, 693, 755, 889, 935-936, 946-947, 1127, 1129-1130, 1136, 1176, 1198, 1212, 1311-1313, 1316, 1425-1426, 1732, 1846, 1858, 1905, 1923-1926, 1928, 1963-1964, 1968, 1989, 1991, 2002
SBIR 1963, 1965-1968, 1970-1977
scienter requirement 2024, 2033-2034, 2040
Second Generation Gender Bias 766
Self-Efficacy 141, 162, 206-207, 209, 211-212, 216-217, 220-222, 292, 306, 329, 334, 338-339, 341, 343, 353, 364, 386, 534, 539, 699, 718, 811, 816, 818-820, 822, 874, 898, 900-904, 906-910, 949, 1099, 1410, 1416, 1421, 1652, 1684, 1687-1688, 1690, 1695, 1710, 1763, 1772, 1914, 1916
self-efficiency 203, 205-206, 208, 211
self-perceived English language proficiency 324, 333, 336-338
SEM 128-129, 150, 445, 448, 640, 642, 926, 1244, 1247, 1249, 1360, 1927

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sero-positive status 1257-1259, 1262, 1264, 1266-1270, 1274
Service Sector 15, 354, 380, 496-497, 505, 508-509, 511-512, 515, 1143, 1147, 1173, 1209, 1436, 1795, 1933-1934
Seveso III Directive 960-961, 963, 990
Sexual Harassment 37, 104-105, 175, 761, 1030-1031, 1040, 1045-1046, 1059, 1063, 1122, 1253, 1312, 1322, 1664, 1670, 1980, 1983-1984, 1986, 1989, 1992-2002, 2026-2031, 2035-2038
Social Cognitive Theory 206, 220, 818, 901-903, 1680, 1683, 1687
Social Exchange 35, 150, 153, 160, 1326, 1543
Social Exclusion 33, 171, 518, 1024, 1064, 1066-1067, 1078, 1080-1081, 1085, 1234
Social Health 944, 1224-1227, 1230-1234, 1236
Social Inclusion 1064-1068, 1072, 1077, 1079-1081, 1083-1085, 1760
social injustice 5, 276, 280, 285-286, 288, 290-291, 302
Social Justice Case for Diversity 1891, 1903
social marginalization 291
Social Media 16, 162, 165, 170, 174, 176, 178, 180, 182, 344, 684, 702, 714, 758, 828, 1030, 1231-1232, 1236, 1631-1632, 1715, 1720, 1772, 1911, 1915, 1984, 1994, 2021, 2032-2033, 2035-2037, 2071, 2086-2088, 2090, 2098-2100, 2102, 2107, 2109
Social Networking 167, 178, 218, 1222, 1225, 1230-1233, 1236, 1314, 1802, 1907, 1915, 1919
Social Programmes 2069, 2078
Social Skills 170-171, 350, 356, 944, 950-952, 1412, 1423, 1430, 1527-1530, 1545, 1648, 1704, 1906, 1921
Social Support 22-23, 26-27, 30, 34-35, 37, 175, 183, 253, 258, 265-267, 270-271, 329, 331-332, 538, 540, 700, 760-761, 803-804, 836, 863, 890, 941, 946-947, 951, 955-956, 1166, 1173, 1218-1219, 1222, 1224-1225, 1227, 1230-1236, 1293, 1369-1370, 1372, 1384, 1391, 1397, 1431, 1457, 1529-1530, 1541, 1543, 1545, 1644, 1660
Socially Marginalized 275-276, 278, 280-281, 283, 287-289, 291, 302, 806, 808
Sociological 9, 33, 54, 94, 164, 294, 363, 400, 411, 750, 811-812, 818, 820, 1113, 1124, 1139, 1143, 1209, 1214-1215, 1217, 1235, 1254, 1642, 1678, 1901, 1917, 1928-1929, 1942
socio-technical systems 66-67, 77, 80, 84
sociotechnical systems approach 2113, 2118, 2121-2122, 2125, 2129
Solvency Ratio 1950, 1962
standard time 585-586, 592, 595-596
State Of The Art 66-67, 172, 573, 720, 736, 797, 869, 955, 1368, 1614, 1928
Statutory 473-474, 476-478, 481, 488-489, 499, 503, 506-509, 512, 514-515, 1026, 1029, 1035-1037, 1039, 1146, 1159, 1853, 1987, 2020-2021, 2025-2026, 2031, 2033, 2035, 2037, 2094
Statutory Welfare 476, 478, 489, 499, 506-509, 514-515, 1146, 1159
Strategic Management 224, 228, 410, 413, 810, 813, 1112, 1114, 1634, 1637-1638, 1642, 1647-1648, 1709, 1754, 1779, 1975
Strategic Plan 232, 237, 420, 808, 824, 833, 1738, 1871, 2109
street hawkers 2055, 2057, 2059-2060, 2062-2064
Stress 5-8, 12, 16, 18, 20, 23, 25, 32-35, 46, 50, 55, 64-65, 69-70, 74, 80-81, 84, 91, 139-141, 144, 146, 149, 162, 168-169, 173, 175, 177-179, 181, 183, 207, 211, 218, 221, 243, 252-258, 260, 265-274, 313, 326, 329, 331-332, 339-341, 343, 353-354, 356, 365, 367-387, 422, 439-443, 451, 464, 466, 480, 483, 504, 511, 516-527, 531-532, 534-535, 538-540, 542, 544-545, 551, 568-569, 581, 586, 588, 597, 620-622, 664-665, 669-670, 673, 677-678, 681-682, 684, 687-689, 696-703, 709, 711, 713, 723-724, 726-727, 730-731, 733, 735-736, 738, 740, 759-760, 765, 825, 835-836, 838, 862-865, 869, 871-872, 875, 878-880, 883-884, 890-893, 895-896, 899, 902, 905, 909-911, 913-914, 922-923, 926-931, 937-944, 948-958, 1042, 1151, 1161-1172, 1174, 1196-1201, 1203-1205, 1207-1210, 1212, 1214-1217, 1219-1220, 1229, 1231-1232, 1235-1236, 1238, 1240-1241, 1250-1251, 1253, 1256, 1282, 1284-1285, 1287, 1289, 1324-1339, 1342-1343, 1358, 1360-1362, 1367-1373, 1375, 1377-1378, 1386-1390, 1393, 1396-1398, 1403, 1405-1406, 1408-1413, 1416-1425, 1427-1436, 1438, 1441, 1449-1451, 1454-1465, 1467-1476, 1478, 1507, 1510, 1522-1523, 1529, 1534, 1540-1541, 1543, 1545-1546, 1552, 1645, 1648, 1652, 1659, 1661, 1700-1702, 1704, 1709, 1712, 1715-1718, 1722-1724, 1726-1729, 1756-1758, 1760, 1763-1764, 1766-1767, 1776, 1785, 1789, 1791, 1793-1794, 1798, 1801-1802, 1804-1805, 1807-1808, 1810, 1868-1869, 1878, 1923-1926, 1928-1929, 2005-2013, 2015-2017, 2021-2022, 2025, 2038, 2052, 2055, 2057, 2059, 2061-2066, 2070, 2072, 2075, 2077-2079, 2081, 2084, 2108, 2119, 2122-2123, 2127
Stressors 16, 178, 243, 254, 256-258, 260, 265-267, 269, 332, 442, 531, 567-568, 698, 759-760, 862, 867, 871, 876, 880, 882, 892-893, 909, 911, 926-930, 933-936, 938, 941, 949, 958, 1163, 1234,

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1240, 1249, 1277-1278, 1285-1286, 1302, 1325-1326, 1333, 1336, 1363, 1372, 1386, 1396, 1411, 1413, 1415, 1418-1419, 1427, 1431, 1456-1457, 1462, 1473-1474, 1476, 1628, 1700, 1702, 1715, 1784-1786, 1790, 1792-1793, 1805, 1809, 2005, 2011, 2070
Structural Equation Modeling 150, 642, 871, 926, 1207, 1244, 1252, 1805, 2120
STTR 1963, 1965-1968, 1970-1975, 1977
Subjective Culture 1638, 1662
Substance Abuse 709, 759-760, 1277, 1868, 1873, 1877, 2006, 2009, 2016, 2072
Supply Chain 390-392, 394, 396-397, 399, 401-406, 408-414, 617, 622, 739, 1112, 1618, 1661, 1738, 2074

T

Talent Development 286, 703, 796, 803-804, 811, 824, 1678
Talent Management 112, 142, 146, 159, 161, 286, 320, 323, 811, 824, 1669, 1672-1673, 1679, 1753, 1860, 1877, 1881, 1900, 1916
Task Analysis 1340
Task Performance 68, 333, 520, 576, 858-860, 864-869, 872, 874, 876, 880-881, 883, 894, 1326, 1345, 1391, 1479
Tax 229, 396, 1224, 1288, 1626, 1633-1634, 1636, 1931, 1949-1950, 1962
TCS 356, 707, 740, 1731, 1734-1735, 1742
Team Performance 131, 133, 309, 349, 834, 893, 1099, 1101, 1105, 1112, 1115-1116, 1209, 1811, 1813-1815
Technology Companies 233, 235, 883, 1945-1949, 1958, 1962
Technology-Based 223, 233-235, 237-238, 241, 678, 713
technology-based company 223, 234, 238, 241
Temporal Demand 552, 556, 1339, 1360, 1365
Theories and Model 36
theory of conservation of resources 212
third culture 1637, 1640
Time Value 1692
Title VII of the 1964 Civil Rights Act 2019-2020, 2040
Titular Power 1717, 1730
TnT 2086-2087, 2089-2091, 2097, 2099-2101, 2104-2105
Tokenism 85, 87-88, 90-91, 93, 95, 97, 822, 1961
Tourism Industry 240, 1043, 1045-1046, 1048-1049, 1051, 1054, 1061, 1195, 1208, 1210, 1304-1305, 1307-1312, 1314-1316, 1318, 1321-1323, 1849, 1915
tourism workers 1208-1211
Toyota Production System 242
transgender 1276-1278, 1281, 1283, 1285-1286, 1289-1290, 1295-1303
Transport Incorporated 233, 241
Trinidad and Tobago 2086-2087, 2089-2090, 2106-2108, 2110
TRIZ 600, 605-607, 612, 614, 616-618
Trust In The Leader 150-151, 153-154, 157-159, 1710
T-tests 888, 926, 935-936
TTOSHA 2091, 2097-2105, 2110
Turnover 91, 121, 126, 138, 144, 159, 221, 243, 324-325, 327, 330-331, 334, 336, 338-344, 346, 351, 358, 360, 384, 391, 396-397, 420, 474, 480-481, 495-496, 517, 521-522, 528, 531-532, 535, 542, 683, 697, 710, 732, 769, 821, 838, 864, 871-872, 881, 890, 894, 897, 913-914, 946, 954, 1120, 1142, 1145, 1154-1155, 1160, 1206, 1208, 1210-1211, 1239, 1250, 1252, 1324-1333, 1335-1338, 1377, 1385, 1394, 1455-1456, 1530, 1543, 1545, 1647, 1681, 1690, 1701, 1734, 1759, 1761, 1764, 1767, 1784-1791, 1794, 1796-1810, 1849, 1867, 1871, 1876, 1879, 2004, 2012-2013, 2080-2081
Turnover Intention 324, 327, 330, 334, 336, 338, 341, 343-344, 890, 894, 1324-1325, 1336, 1338, 1767, 1784-1786, 1788, 1791, 1794, 1803, 1806-1810, 1879

U

Uber 8, 28, 223-224, 228-230, 233-237, 241
UKHSE 2091-2093, 2095, 2099-2100, 2110
Underrepresented Groups 281, 797, 826, 830-831, 843, 1819-1820, 1823, 1826-1828, 1833, 1897, 1963, 1966, 1974
underrepresented minorities 1819, 1824, 1826-1827, 1833
Underrepresented Racial Minority (URM) 1903
Unemployment 5, 27, 101, 474, 504, 742, 745, 913, 1022, 1038, 1066-1068, 1080, 1144-1145, 1223-1224, 1229, 1231-1232, 1234-1236, 1256, 1259, 1307, 1311, 1437, 1615, 1631-1633, 1635-1636, 1793, 1868, 1878, 1931, 1933, 1936-1938, 1941-1942, 1997, 2057, 2066
upskilling 1, 7, 9, 11-18
Use Value 1692
USOSHA 2095-2096, 2099-2100, 2102, 2110

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V

Value Exploration 2009, 2018
veteran employee 1867-1875, 1883
Veterans 297, 831, 843, 1664, 1861, 1866-1883
VO2 585, 588-594, 597
Voluntary welfare 515
Vulnerability 153, 191, 272, 726, 967, 1272, 1285, 1368, 1408, 1421, 1479, 1719-1720, 1997, 2024, 2057, 2059-2060, 2064-2066

W

Wage Satisfaction 1176, 1183-1184, 1187, 1189-1191, 1195
Website Effectiveness 2110
Website Efficiency 2090, 2110
Welfare Measures 474-479, 488-490, 492-501, 503-507, 509, 514, 1141-1148, 1152-1159
welfare programmes 495-497, 499-501, 505-513
Welfare Schemes 473-476, 479, 481, 489-490, 492-493, 495-499, 501-503, 505-507, 510-514, 1144-1148, 1152, 1156-1158
Well-Being 1, 5-6, 18-19, 21-22, 25, 31-33, 35-39, 41-43, 46-52, 59, 62, 139-140, 148, 152, 162, 168, 173, 187-188, 197, 203-205, 210-222, 225-227, 239, 252, 254, 271, 273, 283, 288, 325-328, 336, 339, 342, 344, 350, 370, 387, 470, 473, 497-498, 500, 512, 518, 520-522, 528, 533-536, 538, 540-542, 643, 647, 651, 660, 664, 677, 679, 682, 687-689, 698-701, 703-704, 708, 717, 725, 738-741, 821, 826, 835-836, 849, 882, 890, 895-896, 901, 915, 921, 931, 939, 943, 947, 949, 951, 956, 1065, 1141, 1145, 1161-1162, 1164-1169, 1171-1172, 1174, 1198, 1208-1211, 1213-1217, 1219-1220, 1233, 1235, 1241, 1335, 1340, 1368-1369, 1372, 1377, 1386, 1393, 1396, 1438, 1457, 1473, 1476, 1522, 1526-1528, 1530, 1540-1541, 1545, 1609-1610, 1617, 1621, 1626, 1629-1630, 1634, 1636, 1638, 1693-1694, 1696, 1700-1708, 1710-1713, 1715, 1729, 1745, 1749-1750, 1753-1754, 1756-1760, 1765, 1785-1786, 1793, 1796-1802, 1804-1805, 1807-1808, 1873, 1927, 1948, 2011-2013, 2015-2017, 2036, 2065, 2070-2071, 2073, 2075, 2078, 2080-2085, 2087, 2100, 2112, 2115
Wellness Program 356, 1196, 1198-1200, 1203-1204, 1873, 2015
What is beautiful is good 1906, 1914, 1920-1921
White Normativity 85, 97
Whiteness 85, 97, 822, 1678, 1718, 1723
Whitney 524, 682, 685, 699, 1175, 1183, 1186, 1188-1190, 1731, 1736, 1740, 1743, 1949, 1961
Winding Down Strategies 766
Windrush Generation 100, 113
Wipro 1731, 1734
Women Entrepreneurs 223-224, 231, 1973
Women Managers 124, 1043-1044, 1047, 1056-1058, 1062, 1125-1127, 1131, 1311, 1317, 1769-1774, 1776, 1778, 1780-1782
Work Culture 169, 172, 184, 349-350, 352, 355, 367, 374-379, 381-383, 481, 714, 761, 1432, 1716, 1732, 1770, 1779, 2005
Work Engagement 64-65, 137-140, 144-145, 148-149, 160, 346, 370, 372, 384-385, 388, 539, 542, 700, 926-928, 931-936, 938, 940, 954-955, 957-958, 1169, 1220, 1405, 1529, 1540-1541, 1545, 1547, 1701, 1737, 1740, 1743-1746, 1749-1750, 1759, 1762-1764, 1766, 1768, 1796, 1798, 1803-1804, 1807-1809, 2085
Work Environment 6, 26, 28-29, 54, 103, 117, 119, 121, 130, 139, 141, 152, 181, 186, 188, 191, 207, 251, 275, 278, 288, 297, 302, 309, 314, 326, 330-331, 340, 354, 367, 370-371, 416, 466, 473, 476-477, 480-483, 485, 487-489, 492, 494, 496, 501, 516, 522, 527-529, 531-532, 573, 602, 622, 641, 645, 719, 755, 758, 760-762, 766, 788, 800, 803-804, 825-826, 834, 839, 860, 878-880, 901, 917, 921-922, 946-948, 951, 968, 1001, 1012, 1030, 1042, 1055, 1150-1152, 1160, 1165-1167, 1173, 1206, 1326, 1333, 1364, 1367-1368, 1374-1375, 1384, 1389, 1422, 1430-1431, 1461, 1464, 1475, 1496, 1510, 1526-1527, 1570, 1573, 1610, 1620, 1622, 1629, 1640, 1688, 1717, 1728, 1737, 1742, 1755-1758, 1760-1761, 1772, 1786, 1800-1801, 1810, 1835, 1859, 1871, 1874, 2019-2021, 2026-2028, 2032-2034, 2039-2040, 2071, 2077, 2079, 2081, 2126-2127
Work Ethic 184, 384, 799, 1761
work global 223, 234
work investment 53-57, 59, 61-62, 64
Work Loads 1391
Work Performance 31, 270, 272, 288, 302, 309, 385, 443, 511-512, 519, 573, 578, 596, 646, 683, 692, 882, 890, 897, 946, 1092, 1101, 1176, 1206, 1209, 1337, 1362, 1367, 1370, 1374, 1377, 1620, 1748-1749, 1880, 2028, 2058
Work Related Stress 332, 367, 371-372, 376, 381-382, 519, 535, 880, 1412-1413, 1454, 1457, 1923-1926
work role stress 1324-1328, 1332
Work Stress 80, 343, 371, 379, 385, 439, 517, 519, 535, 688, 699, 702, 941, 948-952, 956, 1324-1326,

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1367, 1369, 1377-1378, 1389, 1428, 1435, 1441, 1450, 1456-1458, 1474-1476, 1529, 2052, 2108
Work Systems 20, 82, 348, 597, 943, 1173, 1340, 1543, 2111-2113, 2115, 2121, 2124-2125, 2127-2129
Workaholism 54, 148, 367-389, 884, 1929, 2085
worked hours per week 1339, 1358-1361
Workforce Diversity 98, 101-102, 113-114, 116-117, 120-121, 125, 130, 137, 139, 248, 300, 322, 357, 812-813, 822, 832, 845, 1089, 1092, 1098-1102, 1119, 1139, 1272, 1645, 1653, 1657, 1661, 1676, 1679, 1686, 1834-1835, 1848, 1852-1853, 1856-1858, 1914, 1916, 1966, 1972, 1975
Workforce Productivity 494, 1853
Working Conditions 24-25, 54, 56, 64, 139, 142, 187, 191, 197, 216, 274, 307, 325, 327, 368, 370-371, 379, 383, 474-475, 495, 498, 504, 517, 544-545, 548-549, 551, 559, 561, 570, 595, 598, 602, 608, 621-622, 640, 826, 880, 890, 943, 945, 949, 953, 1003, 1024, 1027, 1030, 1142, 1145, 1175-1180, 1183-1184, 1188, 1190-1192, 1195, 1208-1209, 1211, 1228, 1234, 1304-1305, 1315-1316, 1325, 1370, 1375-1377, 1385, 1387, 1389, 1396, 1403-1404, 1414, 1419, 1421, 1425, 1432, 1458, 1483, 1485, 1488, 1496, 1500, 1509, 1533, 1542, 1544, 1608, 1615, 1621, 1630, 1711, 1744, 1755, 1760-1761, 1765, 1923, 1933, 2025, 2040
Worklife 473, 531, 711, 874, 1319, 1754, 1757, 1764, 1793
Work-Life Balance 53-56, 61-62, 149, 386, 480, 712, 736, 752-753, 756, 761-762, 792, 794, 948, 1055, 1150, 1172, 1208-1214, 1217-1219, 1430, 1529, 1750, 1760, 1770, 1772, 1774, 1776, 1797, 1801-1802, 1808, 2070, 2075, 2079-2084
Workload 54, 56, 62, 66-77, 79-84, 165, 226, 257, 356, 368, 381, 480, 483, 527, 535, 543-545, 551-553, 555-556, 560, 563-566, 582, 585-588, 591-596, 598, 648, 650-651, 660, 712, 736, 753, 760, 863, 877-897, 905-906, 913-914, 916, 918, 921-922, 1023, 1151, 1162, 1171, 1197, 1213, 1339-1346, 1348-1349, 1351-1366, 1368, 1372, 1375, 1391, 1396, 1415, 1420-1421, 1433, 1455, 1457, 1489, 1533, 1537, 1558, 1597, 1600-1601, 1750, 1756-1758, 1760, 1785, 1791, 1793, 1795, 1809, 1933, 2119-2120, 2124
Workplace Connectivity 766
Workplace Diversity 98, 113, 115, 118, 132-133, 298, 300, 305, 315, 323, 363, 365, 827, 838-839, 856, 1088-1090, 1095, 1098-1100, 1119, 1122, 1139, 1665, 1681, 1686, 1689, 1749, 1782, 1829, 1856, 1876
Workplace Health and Safety (WHS) 1609, 1625
Workplace Health Promotion 25, 663-665, 668-669, 673, 676-679, 1206, 1574, 2084, 2126
workplace intervention 1550
Workplace Justice 1175, 1183-1184, 1190, 1195
Workplace Learning and Intervention 1883
workplace productivity loss 252, 255, 266, 274
Workplace Relationships 4, 22-25, 29-31, 34-35, 807
Workplace Stress 8, 50, 253, 368, 371, 441, 518, 702, 709, 711, 713, 731, 913, 955, 1196, 1198-1201, 1203-1204, 1361, 1450, 1455-1459, 1462-1464
Workplace Violence 1024, 1161-1162, 1164-1167, 1169-1170, 1172-1174, 1251
Workplace Wellbeing 707, 709, 711, 731, 1784, 1810
Work-Related Musculoskeletal Disorders (Wmsds) 644, 1550

Y

Years Of Experience 291, 341, 427, 434, 525, 889, 902, 933, 1339, 1343, 1355, 1357, 1360-1361, 1773, 1775-1776, 1826-1827, 2099

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